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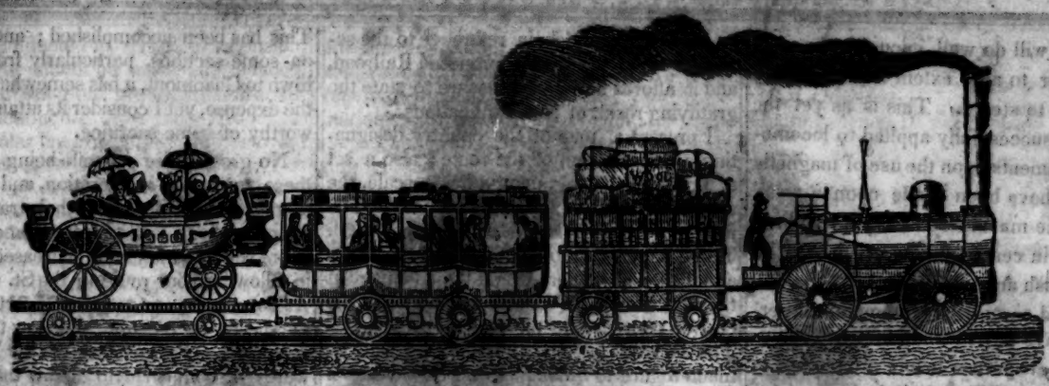

AMERICAN RAILROAD JOURNAL,
AND ADVOCATE OF INTERNAL IMPROVEMENTS.

PUBLISHED WEEKLY, AT NO. 132 NASSAU STREET, NEW-YORK, AT FIVE DOLLARS PER ANNUM, PAYABLE IN ADVANCE

D. K. MINOR, and GEORGE C. SCHAEFFER, } EDITORS AND PROPRIETORS.] SATURDAY, JANUARY 7, 1837. [VOLUME VI—No. 1

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, JANUARY 7, 1836.

NEW ARRANGEMENT.

ROPES FOR INCLINED PLANES OF RAILROADS.

WE the subscribers having formed a co-partnership under the style and firm of Folger & Coleman, for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S. Durfee & Co., will be done by the new firm, the same superintendant and machinery are employed by the new firm that were employed by S. S. Durfee & Co. All orders will be promptly attended to, and ropes will be shipped to any port in the United States.

1st month, 7th, 1836. Hudson, Columbia County State of New-York.

ROBT. C. FOLGER,
GEORGE COLEMAN,

1—tf.

A YOUNG GENTLEMAN, a Graduate of the United States Military Academy, is desirous of obtaining employment as CIVIL ENGINEER. The situation of Assistant Engineer on some work (Railroad or Canal) would be preferred. The most unexceptionable references as to character and ability will be given.

Address J. M. N., at the office of the Railroad Journal, post paid. 1—4t

PATENTS.—From a card attached to the last number of the Journal of the Franklin Institute, we perceive that Dr. Thomas P. Jones has turned his attention exclusively to the preparation of patents.

There is probably no one in this country, or elsewhere, who has such an extensive acquaintance with this subject, both in our own country and in Europe. Dr. J., by his situation as superintendant of the Patent Office, has had opportunities, for years, of informing himself of the details of patents—and we have ever considered his criticisms, in the monthly record of Patents, contained in the Journal of the Franklin Institute, as invaluable.

The recent destruction of the Patent Office has increased the necessity of ascertaining the originality of an invention, before taking out letters patent, while the difficulty of making such investigation has become greater than ever.

A proper preparation of the specifications is necessary to the value of the patent, and sometimes a judicious consultation with good authority on such matters, may save thousands to the inventor.

If we see any more loosely prepared papers, we shall lay the fault at the inventor's own door—no one should err in this matter, when they have the necessary information extended to them on reasonable terms.

SPRINGS, WEIGHTS, ETC. USED AS LOCOMOTIVE POWER.

We have received various communications on this subject, none of which need a reply, as they are all written by persons having little or no knowledge of the laws of matter; though possessed of considerable ingenuity in contriving and constructing. Should such persons take these laws of matter as they exist, and not as they imagine them, their inventive talent might be turned to some account.

Elementary works intended for the purpose of setting forth the laws of physics in the plainest language and without reference to technicalities, are naw to be procued in almost every village in the Union, and at an expense bearing a exceedingly small proportion to the sum wasted in useless experiment. Experience is a dear school. Quite recently we were shown by a gentleman of this city, an apparatus for perpetual motion, which cost more than thirty dollars, the necessary failure convinced him that he had been engaged in attempting to execute impossibilities.

Much has recently been said of an experiment in New-Jersey, in which a combination of springs was intended to furnish locomotive power We have never even noticed it, well knowing that failure was certain. The machinery in an attempt to put it into montion, has been partially destroyed as we undersed. This is to be regreted, as new attempts may be made, until a final test shall prove the error of the invention.

It must be distinctly understood, that no spring, weights, or fly-wheels can add power to a machine—that a man in winding up exerts as much power as the machine does during the continuance of its operation, and in some instances, where the machinery is complex a large portion of this power is lost.

Where a long contiued and uniform motion is desired without much power, clock

machinery will do well enough—the moment power to any extent is desired we must resort to steam. This is as yet the only agent successfully applied to locomotion; experiments upon the use of magnetic electricity have been made upon a small scale, but the machinery is as yet too little understood in certain points of view to be able to furnish any useful hints.

We would earnestly recommend all persons who have any inclination to mechanical pursuits, to peruse before attempting to construct machinery, the work on Mechanics belonging to Lardner's Cabinet Cyclopedia—or some other popular treatise on this subject.

SCREW SETTER.—This instrument was invented and patented by Mr. George Page, of Keene, New-Hampshire, and is found by all who have used it exceedingly convenient.

The idea of the "screw setter" was suggested by observing the *delay* arising from the use of the ordinary implements for inserting screws, especially where it was necessary to counter sink the head. To do which, in hard wood, *three* different tools are generally used, whereas with the "*Page's patent screw setter*" it is all done with one tool, and in the same time that *one* of the three of the ordinary kind can be used.

The "screw setter" has a point like a *gimblet*, to correspond with the thread, a second part like a *screw augur* for the *body* and a *reamer* to counter sink for the *head* of the screw.

This little implement is of various sizes, and fitted into a *brace*, or *bit stalk*, like the common bit, and is used with the same facility. One of its greatest recommendations in our estimation, is that the screw will always fit the place it is designed to fill without being strained by a want of truth in the use of the different tools used in setting it.

Wherever they have been exhibited they have been highly approved, and although never advertised, the demand is greater than they can supply. They are manufactured by Page & Edwards, at Keene, New-Hampshire, and are sold at $3 per dozen, and of many sizes.

REPORT OF A SURVEY OF THE WATERTOWN AND CAPE VINCENT RAILROAD, BY WM. DEWEY, ESQ., CIVIL ENGINEER. TO

JERRE CARRIER, HENRY AINSWORTH,
ROSWELL T. LEE, SAMUEL LOCKWOOD,
EDMUND KIRBY, GEORGE C. SHERMAN,
ISAAC H. BRONSON, JOHN WILLIAMS,

Commissioners of the Watertown and Cape Vincent Railroad.

GENTLEMEN: A careful investigation has been made of the country between Watertown on the Black River, and Cape Vincent on the St. Lawrence, in reference to the selection of a route for the proposed Railroad, and it affords me much pleasure to state the gratifying result of my examinations.

I present a map of the country designating a ground plan of the route; also a set of profiles, showing, upon a large scale, the quantity of work requisite to reduce the surface to a practicable grade for our purposes. These papers, in connection with the notes attached, will render evident the adequacy of the estimates, upon which a calculation of the cost of constructing the Road is founded.—The surveys have been conducted with as much regard to a complete understanding of the subject, as the proposed nature of the examination would admit; and I have no hesitation in saying, that, although in the location of the Road, some variations may be made, yet, no line, judiciously established, can affect the estimate so as to increase its amount. I can pronounce emphatically, that the section of country reconnoitred in reference to this project, offers great and unusual advantages; and I confidently believe, you can invite attention to your road as one of much importance, and well entitled to the favorable consideration of the community.

A cursory examination of the country from Watertown to Cape Vincent, convinced me that the most feasible route could be found, by following down the Black River, until the hills, setting in from the North, were passed; and thence, to proceed, by the way of Limerick, to Chaumont—leaving the Bay at Chaumont, it was evident that, to avoid the steep hills crossed by the Turnpike. we should be compelled to follow a line north and north-east of the road until they should be rounded, when an easterly course could be taken to the Cape.

This general topographical view, having shown the course to be pursued in the prosecution of our design, I directed Mr. Robert F. Livingston to carry a regular line of survey from Watertown to Chaumont, while Mr. L. N. Bowlsby, with his party, examined the country from Chaumont to Cape Vincent. I shall proceed to give a condensed statement of their operations.

The line was started from Watertown, at a point on the flat, northwest of the Court House, and near the stone mill of H. H. Coffeen. Our Bench, at this place, was ascertained to be 153,073 feet above the plan of reference, or the level of Lake Ontario. My estimates are founded upon an assumption that the road will terminate at this point, and perhaps it is as near an approach to the heart of the Village, as would, under a consideration of all circumstances, be deemed advisable.

Following the flat, in a north-westerly course, the Black River is crossed in the vicinity of the County Poor-House, by a bridge 266 feet in length. Curving to the left, we advanced, in a westerly direction, towards Brownville. The route followed the bank of the River, and frequently came in very near contact with the lower road from Watertown.

Since, while locating the line of the Watertown and Rome Railroad, I had found that the entire routo could be passed, without resorting to a grade exceeding 33 feet per mile, I deemed it a matter of sound policy, to use, on the line of this road, no heavier ascent. This has been accomplished; and although on some sections, particularly from Watertown to Chaumont, it has somewhat increased the expense, yet I consider its attainment well worthy of some sacrifice.

No greater rise per mile being used, when these roads are in operation, and a connection formed, engines and their trains, prepared to pass with facility from Rome to Watertown, will experience no increased difficulty, in following your route to the St. Lawrence. At Brownville our grade is 75,710 feet above the Lake, or 78,853 feet below the point of departure. Passing through the Village, we were still compelled to follow the course of the river, by hills setting quite out to its banks. An arm of the Black river, called the Basin, was crossed, and immediately after a deep ravine. Here I have estimated for 1188 feet of trestling, and 198 feet of bridging. This difficulty surmounted, more favorable ground was reached, and crossing Perch river, we passed through Limerick, and pursued a straight course, parallel to the stage road, until we reached the Village of Chaumont. With the exception of bridges at Stoney Creek, Griffin's Creek, and Saw-Mill Stream, the character of this last course is very good, and the grades quite moderate. By the profiles, it will appear that I have generally preferred obtaining a graded surface by raising embankments, rather than by making deep excavations through the ridges. The adoption of this course was induced, from the circumstance, that in most instances, the ridges cannot be cut deeper than 3 or 4 feet before metalliferous limestone, of a very compact nature, is encountered, while the embankments, whose average heights seldom exceeds 4 or 5 feet, can generally be formed by throwing up material from the sides of the road, or by availing ourselves of such knolls of loose earth as are occasionally encountered. Further investigation has shown that after leaving the Basin and Ravine, below Brownville, a route could be selected, on a course bearing more to the north than the one followed, and passing to the right of Limerick, and of the Chaumont road, which would avoid some of the unfavorable features exhibited upon the profiles; but since the course from Limerick is perfectly straight, it becomes a subject for careful consideration, to decide upon the expediency of obtaining a more level line by curving.—From Watertown to Brownville, the soil to be removed is of a light sandy character; thence to Limerick we meet with both sand and clay, and for the residue of the distance to Chaumont, the sub-soil is of a clayey nature.

I have estimated for nearly 1000 feet of trestling, and about the same amount of bridging, in approaching, crossing, and leaving the Bay at Chaumont. Limestone of a superior quality, and in convenient shapes for piers and abutments, can be readily obtained on the shores of the Bay, and within 3 or 400 feet of the bridge. It is from the shores of this bay, that these splendid blocks of limestone are procured, that are used, by the United States government, in the construction of the piers at Oswego Harbor.

The road surface of this bridge will be elevated 25 feet above the water. Considerable investigation was made, for the purpose of relieving its length and height, but a diminution of not more than from 150 to 200

feet could be effected in its line of extension, and its height cannot be materially reduced, without depressing the grades below our established maximum.

Two regular lines of survey were carried from Chaumont to the St. Lawrence. The first route proceeded on a straight course to about 60 chains above Three Mile Bay.—The crossing of Three Mile Creek is effected without any difficulty, but a short distance beyond the valley, there occurs a ravine of great length and depth, which is passed by a high trestling, and, after cutting through a clay ridge, the level of a great swale is reached. By approaching and leaving this ravine, at points different from those adopted, the amount of work can be greatly reduced; and I may here remark, that in several instances, the features of our profiles might be alleviated, by the selection of more advisable lines, but since the period assigned for field duty did not allow these changes to be effected on the gronnd, I have preferred basing my estimates upon the line, as actually surveyed, to obviate any doubts as to their sufficiency to cover the cost when more carefally located.

Having attained the surface of the swale, we followed it upon an almost level grade for a distance of nearly two miles. Passing through the clearing called the "French Settlement," Mud or Kent's Creek was crossed near Lee's Mills, the level of another swale reached, and the line entered Cape Vincent upon a gentle grade, and with trifling excavation and embankment.

The sudden elevations and depressions that are such formidable objections to the travel upon the Turnpike Road, are entirely escaped by keeping to the right of the road, since, in that direction, the hills suddenly fall off into low swales, over whose surface an almost level line can be maintained. On the entire distance from Chanmont to the Cape, it is seldom that the vertical extent of our excavations or embankments exceed 4 feet, with the exception of the deep ravine above Three Mile Bay. Over the surface of the swales, the embankments are calculated to be formed from the deep ditches requisite here to secure a perfect drainage for the road.

The second line from Chaumont pursued a more northerly course than that followed by the first route, and for some distance proceeded parallel to the old State road, and crossed the road from Three Mile Bay at the "Soper Settlement." Here the upper extremity of the great swale, crossed by the previous line, was passed, and after rounding to the north the hills near the French Church, we proceeded to the Cape on a course not varying essentially from the first followed. The features of the second line did not differ much from that previously examined—the heavy trestling, near Three Mile Bay, is avoided, and a saving effected of a few thousand dollars, as appears by the tables of estimate.—The distance is increased 11.59 chains.

The advantages of pursuing a more inland course is possessed by this line, and consequently that of proving more generally convenient to the country. This consideration should have some weight in the determination of the line to be adopted.

While the survey was progressing from Brownville to Limerick, a line was carried with reference to a Branch road, to the new and thriving Village of Dexter, eligibly situated near the head of Black River Bay, and rapidly rising into importance. The examination showed the length of line to be 70 chains, and proved the feasibility of constructing a branch.

Superstructure.—Nearly the entire distance from Chaumont to Cape Vincent, the route is located through a heavily timbered country, abounding with valuable material for the formation of the superstructure of the road.

The White Pine of this region has long maintained a superior rank in market, and offers an excellent and cheap article for our Bridge and Trestle work.

White Cedar, for cross-ties, abounds, particularly on Chaumont River, and a good quality of oak can also be obtained for that purpose. Black Ash, for the upper rails, very straight, and easily prepared, is found in immense swales. Swamps of Tamarack are also met, from which the entire road may be furnished with this timber, the superiority of which, for the longitudinal sub-sills, is generally admitted. When protected from contact with the atmosphere, no limit for its duration can be indicated, and wherever it can be obtained for railroad purposes, it is adopted.

I shall not undertake at present, to specify a mode of superstructure for this road, but shall assume the same cost per mile as that estimated for the Watertown and Rome railroad, which includes an iron rail 2¼ by ⅝ths of an inch. Suitable timber is quite as abundant upon this line, and a construction can be formed at the same cost, fully as efficient and durable. White Hemlock constitutes the principal material in the superstructure of that road, and although little of that timber is met upon this route, yet a selection can be made from the variety of other valuable timbers I have enumerated.

I subjoin tables showing the quantity of work to be performed, and the expense, to grade and construct a single track from Watertown to Cape Vincent:—

Estimate.—The first section extends from a point near the Court House at Watertown, to the west side of Chaumont Bay. Distance 13 miles 35 chains.

116,147 cubic yards of Embankment,	$13,937 64
59,218 cubic yards of Excavation,	8,882 70
Bridging and Trestling,	18,652 00
Clearing,	250 00
Grubbing,	240 00
Culverts,	260 00
Road crossings,	240 00
Contingencies, 10 per cent.,	4,246 23
	$46,708 57

The first line of the second section, extends from the west side of Chaumont Bay to Cape Vincent. Distance, 11 miles 52 chains.

55,010 cubic yards of Embankment,	$6,601 20
56,219 cubic yards of Excavation,	6,746 28
Bridging and Trestling,	5,544 00
Clearing,	744 00
Grubbing,	930 00
Culverts,	500 00
Road crossings,	150 00
Contingencies, 10 per cent.,	2,121 54
	$23,337 02

The second line of the second section, extends from the west side of Chaumont Bay to Cape Vincent. Distance, 11 miles 64.59 chains.

55,612 cubic yards of Embankment,	$6,673 44
49,597 cubic yards of Excavation,	5,951 40
Bridging and Trestling,	1,848 00
Clearing,	846 00
Grubbing,	1,050 00
Culverts,	450 00
Road crossings,	200 00
Contingencies, 10 per cent.,	1,701 88
	$18,720 72

By the first line the entire distance from Watertown to Cape Vincent, will be 25 miles 8 chains.

The whole cost for grading, $70,045 59

By the second line the entire distance will be 25 miles 19.59 chains.

The whole cost for grading, $65,429 29

Average per mile for grading, $2,591 76

Superstructure of the Watertown and Rome Railroad, per mile, 3,190 20

Total, per mile, $5,781 96

25 miles 19.59 chains, at $5,781 96 per mile, $145,965 88

In accordance with your wishes, these estimates comprehend only the grading and superstructure for a single track, with the requisite bridging and trestling, from the point at which the survey was started, at Watertown, to the place of its termination, at Cape Vincent. As respects the Locomotives, cars, station-house at Watertown, &c., it is probable, that, after the completion of the line to Rome, the intimate connection of the two roads, will cause such an arrangement as will save the expenditure, on the part of this company, of funds to procure these necessary appendages; since it would be both convenient and economical, that the same train should pass over the entire distance of the united roads from Rome to Cape Vincent.

Remarks.—In an engineering aspect, the advantages presented by your road are:—Its cost will be much below the average per-mileage expenditure for similar works—its grades at no point exceeding a rise of 1 in 160, or 33 feet per mile, are such as can be surmounted by locomotives, with heavy loads, with much ease, and great rapidity—its departure from a straight line will not require, in the most confined locality, a less radius than 2000 feet, while in most cases, they can be projected from radii of 5 or 6000 feet—the country through which it passes abounds with valuable material, by means of which repairs can be readily and cheaply effected; and the mode

of construction is that generally adopted, universally approved, and comprises an iron rail of much strength, and timber of great durability.

Since this road is mainly designed to constitute a continuation of the Watertown and Rome railroad to the river St. Lawrence, and thus afford a ready means of access, at all seasons, to the Canadas, in a consideration of the inducements it presents for the investment of capital, the principal light in which it should be examined is in reference to its forming a link in a great line of internal communication extending from the city of New-York to the far West.

Leaving the emporium of our State by the New-York and Erie Railroad, we proceed to Deposite, on the Delaware River, and thence to the city of Utica, by a route that must soon be improved. By means of the road to Watertown and Cape Vincent, the St. Lawrence is reached, and the enterprise of our Canadian neighbors will soon provide a direct communication from Kingston to Lake Huron. This line will be shorter, by many hundred miles, than any of the present means of communication with the great West, and will unquestionably form a channel much followed by the great current of travel constantly pouring into that immense region. Full seven months of the year the navigation of the Lakes is either dangerous or entirely interrupted, and during that period, this route must inevitably command a great portion of the western travel.

Indeed, if a line be drawn upon the map from the city of New-York to Kingston, it will appear that at no point, the New-York and Erie Railroad, a road from Deposite to Utica, and thence to Watertown and Cape Vincent, will depart 25 miles from the straight line—thus demonstrating that there is every reasonable prospect of the almost immediate construction of a line of communication, by the nearest possible route, from New-York to the great Lakes.—During the progress of the survey, one of my parties passed over to Grand Island, and carried across it a line of levels, demonstrating the practicability of excavating a channel, at a trifling expense, and thus avoid the necessity of unloading, or of making the circuit of the island, in passing from Cape Vincent to Kingston.

That this section of the State should have remained so long unnoticed, is truly surprising. Although possessing a soil unsurpassed in fertility, it has been until within two or three years, entirely neglected, and almost unvisited, except to carry away its Pine and Oak timber. Of late its splended agricultural advantages have been somewhat brought to view, its true wealth has been demonstrated, and thousands of acres, but a few years ago considered almost valueless to their owner, have lately been sold, at prices that have indicated that the people are awakening to the true value of their possessions.

As a wheat and grazing country, it is destined to hold a superior rank; and its rich swales, hitherto entirely overlooked, must constitute, when properly cleared meadow land unequalled in productiveness. On every side is now beheld the cabin of the setler, and the smoke rolls up from many a clearing. Lands are increasing rapidly in value, and the construction of the Railroad will enable this portion of our State to assume a station equal, in every respect, to those whose natural location has caused their resources to be earlier developed.

Before closing, I avail myself of this opportunity to acknowledge the aid and information afforded, in the course of the survey, by the residents upon the line; and also to tender my thanks to Messrs. R. F. Livingston and L. N. Bowlsby, Assistant Engineers, and Wm. C. Moore, Assistant Draftsman, for the spirit and intelligence with which they have aided me in this, as well as other investigations made in the course of the past season.

I remain, gentlemen,
Yours, very respectfully,
WILLIAM DEWEY,
Civil Engineer.

Watertown, November 18th, 1836.

AUBURN AND ROCHESTER RAILROAD.

The following very satisfactory report from actual surveys by competent engineers, of the line between Auburn and Rochester, renders it in our view, certain that the railroad between Auburn and Rochester will be made, and that the stock will be very productive. We congratulate the public upon the exceedingly favorable result of this investigation, and calculate with confidence that the time is near, when our villages will reap the advantages which result from a rapid and safe transportation of passengers, produce and merchandize.

It is hoped the commissioners and committees in the several towns, will adopt immediate measures to take up the balance of the stock.

REPORT.

The undersigned, in submitting to the Commissioners of the Auburn and Rochester Railroad, the following report and accompanying estimate, does not claim to have based them on the only good route for a railroad that can be found between Auburn and Rochester. The best possible line may be yet undiscovered. The short time and limited means placed at his disposal, did not allow the examination of every pass through a country where many good lines may be had.

The surveys show a very good and direct route across the country, touching at the points designated in the charter.

The levels, distances and estimate of cost, are herewith submitted. They have been made out from lines laid down on the ground and not from conjecture. The amount of excavation and embankment is the amount which is due to the data, furnished by the minute books; so that the line on which the estimate is based is perfectly known. And although alterations may be made to lessen the cost and distance, none need to increase it.

When more minute examinations are made, it is confidently believed the cost will be lessened and the line made better.

In arranging the grades of the line, it has been found that in only two instances has it been necessary to have an elevation of more than 30 feet per mile, rising eastwardly, and only one of 40 feet rising westward.

The two and a half miles grade entering Auburn, is at the rate of 40 feet per mile. As this will be near a depot where engines will generally be waiting in working order, one can be sent to help any heavy train that may need assistance, and that without making it necessary to keep up an extra locomotive.

The other grade of 40 feet, is at Cayuga Lake, but it is very confidently believed that this can be reduced to 30 feet by lengthening the line, and this alteration is strongly recommended.

Late experiments show how small is the effective power that a locomotive has to spare on high grades beyond moving herself, and the vast advantage in point of usefulness that a grade of 30 feet per mile has over 60, 50 or even 40 feet. There are two routes from Auburn to a short distance above Seneca Falls; both are practicable, and from the selection of the northern route, to estimate upon, it is not to be inferred that the other is abandoned.

Future examinations must decide on the merits of rival routes.

The northern route passes the Owasco outlet near the south-east angle of the prison wall, and follows the general course of the stream downwards for two miles, and then passes to the valley of the Crane Creek.

There are two points of deep cutting in this distance. From Crane Brook to the Cayuga Lake, the country is traversed by ridges, running parallel north and south. We cross fifteen of these. They vary in heighth and width, but the expense of crossing them is less than would be imagined from the first glance. The grades can be so arranged as to rise and fall, and to make cutting and embankment in proper proportions, and leave the grade in useful effect equal to, if not better than 30 feet per mile, except in the cases mentioned above.

In the last mile before reaching the lake, the line bends to the north and passes ¾ of a mile, to the outlet near the junction of the Seneca and Cayuga canals. The outlet must be crossed by a bridge considerably elevated above the waters and the marsh bridge, across for a mile and a half. From the marsh the rise is to the west, and for the first mile at the rate of 40 feet per mile, and some deep cutting must be encountered, after which the ground becomes highly favorable all the way to Geneva, which is reached by a grade in no case exceeding 20 feet in a mile.

The southern route, in passing out of Auburn, will go south of the turnpike for 4½ miles, when it bends to the north and intersects the northern line at 6 miles from the starting point. It follows this line for 1 mile and then turns to cross the lake at a point half a mile below the Cayuga bridge, where the lake is a little more than a mile wide (1½ mile.) The bridge here will necessarily be somewhat elevated, but bridging in such still and shallow water is not expensive and the only exposure to be feared is the wind; the upper bridge will break the force of the ice. The rise on the opposite

side of the lake can be overcome by some deep cutting for the first mile; after this, there is no difficulty to *Geneva*, except crossing the Seneca River at a very favorable point. Between Auburn and the lake, in several places the ridges are very narrow and high, and experienced miners will drive tunnels through these ridges in a short time, and prop them substantially, in a manner that will last ten years, and this will leave the earth above the tunnel where it will be in the best possible position to be put in cars and carried on the railroad to make embankments where bridges have been erected for temporary use.

From Geneva to Canandaigua, and through to the valley of the outlet of the Canandaigua Lake the county is of a highly favorable character. From the reconnoissances made, it is confidently believed that a railroad can be constructed for the sum estimated by Judge Bates. The summit beyond Canandaigua, is easy to be reached from the valley of the outlet. From the summit near Canandaigua to the summit near Victor, the ground falls at a rate that makes it necessary to lay the lines at a grade descending west at thirty feet per mile, nearly the whole distance. The ground is generally favorable, and indeed highly so, except two miles, near Victor. It is easy either to descend the Mud Creek, or the Beaver Creek, to arrive at Victor valley; the Mud Creek will be probably found the best, all things considered. The ground after leaving Mud Creek towards Fish Creek, is broken and rolling, but easy to excavate.

From Victor summit there are two main routes to Rochester; the comparative merits of which cannot now be decided on, for want of sufficient data. One through Mendon and down Allen's Creek has been sufficiently examined to show that a favorable line may be laid there. Owing to circumstances before alluded to, no more was done than to test the practicability of one route from Mendon to Rochester.

There are three routes between these points that should be carefully examined before a decision is made as to the line to be adoped.

The estimate is based on the route from Victor summit through Pittsford to Rochester; it is very level for the first four miles to the valley of the Irondequoit, from thence for two miles, the county is very uneaven and the valley too low for the grade, causing embankment: the remaining distance to Pittsford by Carter's Basin, is fair and level for six and a quarter miles.

The route crosses the canal a short distance west of Pittsford, and keeps westerly to cross the low valley of Allen's Creek as near the canal as a due regard to direction will admit, to avoid embankment; then bearing northerly to Brighton, it passes into the city bounds of Rochester, north of Main-street, and ends at a distance of six and a half miles from Pittsford, in front of Alexander's Tavern.

The matter of damages is one in which grievous wrong is often inflicted on railroad companies. It is fortunate that the many different routes offer facilities for avoiding those persons who would be benefitted by the improvement and still demand damages. A lesson is due to such, and some may be taught it, if in choosing between two nearly equal routes, that one is fixed on where the proprietors are most ready to give up their claims for damages. Respectfully submitted to the Commissioners of the Auburn and Rochester Railroad, by their obedient servant,

W. R. HOPKINS,
Civil Engineer.

Geneva, 9th December, 1836.

ESTIMATE OF SUPERSTRUCTURE.

DOUBLE TRACK.

2,640 ties *a* 40 cts. - - - - -	$1,056
35,164 ft. bearing plank, *a* $15, -	527
63,360 ft. Rails, *a* $20, - - -	1,267
Laying down, - - - - - - -	1,000
Trimming off, - - - - - - -	1,000
*36 tons iron, 2 inches by ¼ *a* $65	2,350
Total, - - - - - - -	$7,190

SINGLE TRACK.

1,320 ties, *a* 40 cents, - - - -	528
17,582 ft. bearing plank, *a* $15, -	263
31,681 ft. Rails, *a* $20, - - - -	633
Trimming road and laying down, -	1,000
Iron, &c. &c. - - - - - - -	1,170
Allow for turn outs 10 per ct., - -	399
Total, - - - - - - -	$4,293

SUMMARY OF ESTIMATES.

DOUBLE TRACK.

Auburn to Geneva, - - - -	$286,048
Geneva to Canandaigua, - -	178,701
Canandaigua to Rochester, - -	337,489
Cost of fencing, - - - - -	45,545
Station Houses, - - - - -	30,000
Locomotives, - - - - - -	50,000
Trains, - - - - - - - -	15,000
Engineering, - - - - - -	40,000
Damages, - - - - - - -	30,000
Total, - - - - -	$1,012,783

SINGLE TRACK.

Auburn to Geneva, - - - -	$222,433
Geneva to Canandaigua, - -	134,000
Canandaigua to Rochester, - -	253,480
Cost of fencing, - - - - -	45,545
Station Houses, - - - - -	30,000
Locomotives, - - - - - -	50,000
Trains, - - - - - - - -	15,000
Engineering, - - - - - -	40,000
Damages, - - - - - - -	30,000
Total, - - - - - -	$820,458

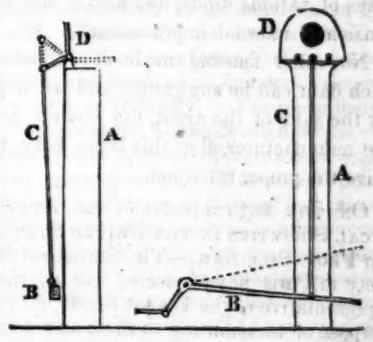
* Constracts are understood to have been made in England at six months, delivered in New-York, for $60.

From the Journal of the Franklin Institute.

ON THE MANAGEMENT OF TURN OUTS ON RAILROADS. BY A. C. JONES, Engineer.

GENTLEMEN,—At the present rapid rate of travelling on railroads, it is a desideratum (in point of safety,) to know that the switches of the turn outs are in the line of the road, so that the train is not necessitated to be much checked, in passing over them. The best method for insuring the right position of the switches, is that used on some short roads, by having a man stationed at them; but on long lines of road, where there are many turn outs, this is not practised, owing to the expense attending it. As a substitute, a ball is placed on the end of the lever used to shift the switches, to show their position. This, I believe, is the best plan in use; that it is defective is proved by the numerous accidents occurring on railroads by running off at the turn outs, it not being foreseen that the switches are wrong. Where the turn out is in, or at the end of a curve, it is difficult to tell by the ball how the turn out stands, until you are so near as to make it impossible to stop in time, if it is not right.

The following arrangement will have a tendency to promote safety in this particular, and the additional expense will be but trifling. Instead of the ball, I propose having a board placed on the post, its face at right angles to the road, with hinges fastened to one edge, and from its face extends a short lever, which is connected to the lever that moves the turn out, so that when the switches are changed, the dial, or board, takes either the horizontal or vertical position. This will be shown more fully by an inspection of the cuts.



On a curve or grade, this method would have the same advantages as on a straight part of the road, and it is evident, the face or edge being presented to the engineer, that he will be thereby enabled to judge how the turn out stands, at a greater distance from it, than by the method in practice, and will consequently admit of his stopping the train in time to prevent accidents.

A. The post. B. The lever. C. Connecting rod. D. Dial.

Respectfully, yours.
A. C. JONES.

Philadelphia, Sept. 1836.

This appears to be a good suggestion. A board, or disk, with a black circle in the centre, surrounded by a broad white border, would be more conspicuous, and its position, in the way proposed, more easily perceived than the ball now in use. In turn outs that are much used, it may be expedient to keep a lamp burning during the night, to show the position of the disk. It seems desirable, however, that every precaution should be taken to prevent the necessity of stopping a locomotive train in order to adjust the switches of a turn out. T. G.

OSWEGO AND UTICA RAILROAD.—The fall of snow last week, we understand, has caused the engineers engaged in the survey of this road, to retire from active duties in the field; but not before they had com

pleted an entire line to Utica on several routes. Mr. Alton has examined the "*direct route*" by Little River, and we learn that it presents no obstacles, and that no grade will exceed 20 feet to the mile.—[Oswego Palladium.]

TERMINATION OF THE WABASH AND ERIE CANAL.—The Ohio Board of Public Works have issued an order for terminating this canal at Manhattan, a town situated at the mouth of Maumee river.

Miscellaneous.

The following letter, addressed to Professor Silliman, and taken from the last number of the American Journal of Science and Arts, is worthy of attention.

Statistical information from the various sections of our extensive territory, will not only add to our own knowledge, but be beneficial to the rest of the world.

It would be curious indeed, to observe the effects of the introduction of manufactures of various kinds, and also of the extension of internal improvement.

No other feasible mode of collecting such data can be suggested, and we hope for the sake of the artist, the student, and the manufacturer, that this letter may receive the proper attention.

ON THE ESTABLISHMENT OF STATISTICAL SOCIETIES IN THE UNITED STATES. TO PROF. SILLIMAN.—The Statistical Society in Paris have selected me as their representative in the United States, for the purpose of transmitting to them any documents which I might be enabled to procure, and for generally aiding their very useful endeavors in Paris, I respectfully desire to propose for consideration the establishment of a "General Statistical Society" in the United States, and to give general publicity to this I have selected your widely circulated Journal as the organ of communication.

The Statistical Society of France was established by Monsieur Cæsar Moreau in 1829; by the high talent of this gentleman, his extensive and varied information, joined with his activity and industry, this society has now the united assistance of almost every government in Europe. The immediate object of the Society rests upon the fact, that the knowledge of mankind increases in proportion to its tendency to observe, and that Statistical Tables, connected with general and particular information, tend greatly to facilitate this developement.

To gather and condense facts which tend to show the increase or decrease of Population, the prosperity of Arts and Manufactures, the state of public instruction, to develope the true state of Agriculture, and generally to make known the exact internal state of a great nation, its imports and exports, the state of its national funds, and those of Chartered companies, must ever claim the attention of every enlightened community. In aiding the deliberations of Government, I deem it of the highest importance, and I am enabled to state that the European Governments have already experienced great advantages from the labors of Statistical Societies, and from that of France in particular. They have tended to facilitate the views of the Statesman, by offering to him in a condensed form, the internal sources of wealth, not only of his own, but of surrounding nations; their labors render the public happiness more secure, inasmuch as the dark paths of the future may become enlightened by the experience of the past; they offer a solid basis for political and social economy, and they relieve and assist the Ministry, of a Government by condensing and bringing to a focus, not only the minutiæ, but deduced facts relative to the internal or external power of any nation, either remote or in their immediate vicinity.

In the United State of America, however, the existence of such Societies must be of incalculable benefit. The embryo gigantic powers of this Republic are now beginning to develope themselves, and it is of primary importance that the grand stream of prosperity be directed into that course which will not only secure the present prosperity, but also the future greatness of the United States, whilst it must add to the welfare and happiness of her population.

The present popular system of rapid and cheap communication, has already been anticipated by the enterprising genius of the United States, and she forms a very prominent example of the immense advantages which a nation derives from the projection of such plans as shall tend to give full scope to the energies of the people, whilst at the same time it opens the paths to the developement of her internal resources, commercial, mineral or agricultural.

To mark out and prudently to direct the course of such facilities of communication, requires the aid of statistic information. The fecundity of the soil, the amount of population, the manufactured products and their separate values, each require particular consideration; and this can be obtained only by personal research. The condensation of such researches forms one of the leading features of a Statistical Society. To accumulate and condense the information given by modern authors, and more particularly that offered by persons who have occasion to visit foreign countries for scientific research, forms the object of the "Universal Statistical Society of France." To contrast the present degree of prosperity with the past, and to inquire into the causes of the increase or diminution, is its particular care; to trace the gradual development of the causes which have influenced the progress, increase, and present actual state of the wealth and power of civilized nations, forms the grand utility to society produced by their united labors; and finally, to contract into one general focus the energies of each nation, and comparing the state of their society both moral and political, their commerce, internal, and their state of Literature and the Fine Arts, with that of another Empire, demands for it the title of "Universal," and eminently merits the zealous support of every enlightened individual, whose nobility of mind prompts him to offer his mite to the general stock of knowledge.

Should this communication through your Journal be the means of having formed in your principal cities, establishments of a statistical nature, be assured that each Society will receive every aid and assistance from the "Universal Statistical Society of France," which will ever be anxious to advance their researches, and to act with them reciprocally.

I have the honor to remain,
Your very obedient serv't,
CHARLES SANDERSON.
Member of the U. S. S. of France, the Imp. Agri. Soc. of Vienna, &c. &c.
New-York, Dec. 10, 1836.

We commend the circular of M. Brongniart, to the especial notice of all interested in the plastic art.

The name of M. Brongniart, will be a guarantee for the proper use of any information that may be transmitted to him.

From Silliman's Journal.

M. ALEXANDRE BRONGNIART'S NEW WORK ON THE HISTORY OF THE ART OF POTTERY AND OF VITRIFICATION.

Museum to illustrate this subject.

In a letter to the editor, dated March 8th, 1836, M. Brongniart remarks: "I am much occupied with a work upon the history of the plastic art, or the art of pottery; and the requests which I take the liberty to annex, have for their object the enriching of a grand and instructive collection which I have formed at Sevres, of every thing relative to the art of pottery, and consequently to the perfection of the work which I have undertaken, and of which I have published the plan in an extract from the article Pottery, in the Dictionary of Technology published at Paris. It forms the half of a volume, in which I have endeavored to present the principles of the art in a manner at once practical, philosophical and elementary. I am this year about taking a journey to England and to Germany, for the purpose of collecting information and specimens for this work and for the collection at Sevres.

As this undertaking of M. Brongniart is important and interesting to science, to history, and to the highly useful and beautiful art of pottery, we publish a translation of the expose entire, and strongly recommend it to the attention of all those who, in this country, have it in their power to promote the object in view. It is quite superfluous to add, that M. Brongniart's character furnishes every security for the able and faithful performance of the duty which he has undertaken.—Ed.

SEVRES, March 8th, 1836.

ROYAL MANUFACTORY OF PORCELAIN, AND FOR PAINTING ON GLASS. U. STATES OF AMERICA.

Instructions as to the manner of co-operating towards the completion of the collection relative to the arts, connected with the manufacture of porcelain and with

vitrification, founded at the Royal Manufactory at Sevres near Paris.

1. What kinds of pottery are used by the different classes of inhabitants of the country; the agriculturists, the mechanics, citizens and merchants, poor and rich?

Is the pottery of native or foreign manufacture?

If foreign, from what country does it come, and in what way?

If of native manufacture, where is it made?

II. As to the native pottery, (and under this name we include all varieties, from the most common to porcelain,) it is desired to collect and procure specimens of every sort. Common pottery, both with and without glazing. Delftware common and Delftware fine. Pottery of brown free stone; crucibles. Varieties of porcelain. Bricks, both common and those manufactured by particular processes.

Plate species.—Plates, oval dishes.

Hollow ware.—Cups, salad dishes, tea and coffee cups.

Round pots, hollow moulded.—Oval and square pieces, saucers, boxes, &c.

The largest piece of each sort that is made.

The name given in the country to each piece.

The price of each piece upon the spot.

Whether there is exportation, and to what place.

III. Fabrication.

1. *Primary materials*—for the mass or paste. Clays. Marls or plastic earths which may be substituted for them. Sands. Rocks or stones. Limestone.

For the glaze or enamel.—If stony materials—feldspar-stones.

If metalic matters—Metals, their oxides, and metalic glass.

Exact localities from which these materials are drawn.

2. *Modelling.*—Moulds of plaster, of terra cotta or other materials of whatever kind.

The lathe and other instruments for fabrication.

Sketches, with exact dimensions of these instruments, if it is supposed that they differ from those used in Europe.

3. *Baking.*—Form of the ovens sketched, with the dimensions.

*Combustibles used, indicating them in the clearest manner possible.

IV. Information peculiar to the country.

1. To designate the principal manufactures of pottery, glass and porcelain in your vicinity.

2. Whether there is in North America, ancient pottery; that is to say, pottery fabricated in remote ages, and which has not been made for a long time. This pottery is found in general in alluvial soil, in the ruins of towns, and perhaps, as in some parts of Italy, and of South America and of the oriental countries of the ancient world, in the graves or tumuli. In Europe, these things have often been admitted into museums as monuments of antiquity but almost never as in relation to the art of pottery and its history. It is in this latter point of view that I regard them, and that I have collected a great number of the ancient pieces of pottery in the museum at Sevres.

To endeavor to collect some pieces of this antique pottery, and to indicate exactly the place and the circumstances in which they have been found, and to endeavor to decide whether it had anciently any celebrity, always however mistrusting the deception of the sellers.

3. Whether there is knowledge from traditions, inscriptions, &c, that the natives (aborigines) of North America have ever fabricated or known glass.

General instructions in relation to the purchase, packing and forwarding of the objects collected.

The expenses which may be incurred in procuring the specimens and the information, will be reimbursed by the administration of the Royal Manufactory of Porcelain, upon the statement sent to the person who shall be designated to receive the amount.

It is expected that these expenses will not rise to a great amount: it is requested, in any event, that they may not exceed, in any one year, the sum granted, i. e. 200 francs for 1836, ($40); 200 for 1837; at least without a previous understanding with the administrator of the Royal Manufactory at Sevres.

It will be necessary to pack the pieces with great care, and to consign them to a merchant in one of the ports of France, to be forwarded by way of slow transportation to the administrator of the Royal Manufacture of Porcelain; forwarding also the expenses of transportation.

It will be necessary that the correspondent at the seaport should write a letter of advice to the administrator of the Royal Manufactory at Sevres near Paris, before the forwarding—that the latter may obtain from the director general of the customs, that the box may arrive under seal, *sous plomb*, and that it may not be opened at Paris: this is very important, to the end that there may be no derangement of labels, nor any breakage. It is equally important that the tickets which may indicate the places where the pieces were made, or those from which they come, should not be separated and mixed during the unpacking. It is desired therefore that they may be fastened either with glue, or with good wafers, or with twine.

Lastly, it is very desirable that there should be attached to the case a separate box, either of lead or of tin, or that there should be sent separately, notes, previously made, of the objects collected and forwarded; taking care that a correspondence be established between the objects and the notes, by means of numbers, which shall follow each other, or by numbering the series.

Alexandre Brongniart.

*The requests for information and for specimens apply equally to glass manufactures and their productions.

From the Annals of Education.

INSTRUCTION IN AUSTRIA.

A recent work on the statistics of Austria, gives the following account of the state of instruction in this empire. There are 15,967 elementary schools, under the name of trivial (primary,) high, secondary, Normal and practical schools, and 8,964 schools of repetition. The whole number of pupils is 1,993,522. They are taught by 21,801 teachers and assistants, and 10,252 catechists or religious instructors. They are under the superintendence and inspection of 14,011 clergymen, who are at the same time local school directors.—And the whole is superintended by 845 district inspectors of schools.

In the institutions for the deaf and dumb and blind in Vienna, Prague, Milan, Gratz, Lemberg, Lintz, and Brixen, there are 300 pupils. The polytechnic school in Vienna, is under the direction of 35 teachers, and contains 747 students, of whom 265 attend the real or general practical school, 87 the commercial division, and 395 that which relates to the arts. The school of forests contains 66 pupils, under the care of a director, and 4 teachers and assistants.

GRATUITOUS SCHOOLS OF DRAWING FOR MECHANICS.

Two gratuitous schools of drawing have been established by an individual in Paris—M. Charles—for the instruction of mechanics. One was formed before the revolution, and involved its founder in suspicion as well as difficulty. For more than six years, however, he has devoted all his evenings to this species of instruction, without any compensation. His object was, to enable mechanics to pursue their employments with more rationality and success; to exercise the eye and the hand, and to elevate their taste, and thus to raise them above the temptation to low vice and degrading amusements. The municipal council of Paris has, at length, assumed the expenses of these schools, and has directed the organization of similar establishments throughout the city. At a public exhibition, more than six hundred pupils were present, and medals were presented, in the name of the king, to the most meritorious.

[Ibid.]

HAVERFORD SCHOOL.

The Friends of Pennsylvania have a flourishing school at Haverford, in Delaware county, whose object is, in their own language, "to combine sound and liberal instruction in literature and science, with a religious care over the morals and manners; thus affording to the youth of our society an opportunity of acquiring an education equal in all respects to that which can be obtained at colleges, without exposure to those associations which are apt to lead them away from the simplicity of our religious profession."

The buildings of this institution—for chambers, school-room, families of the teachers, library, infirmary, &c.—are ample and commodious; at least, comparatively; though we do not consider sleeping rooms, nine feet by five feet six inches, large enough, even when they are as well ventilated and neatly furnished as those of the Haverford school.

"The course of instruction extends to four years, and embraces the Latin and Greek languages, ancient and English lit-

erature, mental and moral philosophy, mathematics and natural philosophy.—There is also a preparatory department.—The students are under the direction of a superintendent, four teachers, a teacher of the introductory school, and an assistant superintendent.

"With this school is connected a valuable tract of nearly 200 acres, which is in the process of arrangement and cultivation, as a farm and garden. The library has commenced with about a thousand volumnes; a philosophical apparatus is provided, and a collection of specimens in natural history and mineralogy is begun, in connection with a generel museum or curiosities."—[Ibid.]

GLASS BEADS.—Few persons, probably, are aware of the amount of trade carried on in this apparently insignificant article. We are told, that from Venice, which contains the principal manufactory, whole ship loads are annually sent to different quarters. The principal customers for them are the various savage tribes in our own continent, in New-Holland, the Pacific Islands, &c. This branch of the glass manufacture still remains to the Venitians, nearly the sole relic of their once boasted superiority in every department of the art. No other nation can rival her either in regard to variety and beauty of color, or cheapness of production.

The glass-houses are erected on the island of Murane, about half a league from the city. The alkalis employed are soda and potash the the sand is found in abundance on the neighboring coast. The coloring matters are obtained from the mineral kingdom, and so varied, that the beads present more than two hundred different shades. While the metal is in fusion, the workman dips into it an iron tube, five feet long, and withdraws a certain portion of the adhesive mass. A hole, corresponding to that of the tube, is then made through it. Two workmen have such a tube thus prepared, join them together by the ends, and then separate as rapidly as possible, stretching the PASTE between them. A tube is thus formed, varying in length and fineness, according to the distance which can be attained before the glass cools. In some instances the tube reaches one hundred feet in length, and becomes like the finest hair. They are divided in pieces of two feet in length and then submitted to the bead maker, who with a sort of hatchet, cuts them into fragments of a length equal to their diameter. These fall into a box of powdered charcoal and clay, which gets into the beads, and prevents their filling up when subjected a second time to the action of the fire. Thus cut and mixed with a certain quantity of this dust, they are put into an iron cylinder, sealed hermetrically, and by means of a handle are turned over the fire until the vessel acquires red heat. The beads are then sufficiently softened to lose their asperities and become smooth by friction, and when taken out, it remains only to wash and sort them which last operation is effected by a series of seives of different degrees of fineness. They are then given to women, who thread them in rows of six or seven inches long, and such is the rapidity with which this is practised, that the work can be procured at the rate of a little more than one cent for 120 rows. This quantity sells at from four to ten cents.

LAUREL HILL CEMETERY.

We have lately visited, with no common feeling of admiration the new and beautiful rural burying ground which a few liberal minded citizens have provided at Laurel Hill, on the river Schuylkill, just below the Falls, and about three and a half miles from the heart of the city. In situation and capabilities it is every thing that could be desired, realizing the wish of the poet to the very letter:—

"Mine be the breezy hill that skirts the dawn,
Where a green grassy turf is all I crave,
With here and there a violet bestrown,
Fast by a brook of fountain's murmuring wave,
And many an evening sun shine sweetly on my grave."

Here the last resting place of friends and relatives may be visited without any of those disagreeable associations connected with our city grave yards. Here the visiter will not be shocked with the mouldering coffin or sunken yawning grave; here the dead will repose amid the beauties of nature, and their memories be associated with the most soothing and most simple emblems of mortality—emblems that are at once the most eloquent advocates of religion, and morality, and the most determined foes to unnatural fear and superstition. Here will be found the tokens of a true and heightened feeling of respect towards that which is again to spring into life—which at once attests man's superiority to the rest of creation, and inculcates the salutary conviction that the spirit lives eternally.

Following out an enlarged view of what will be permanently useful, the proprietors have erected a handsome entrance, of graceful Roman Doric architecture, enclosing Porters' Lodges, &c.; a handsome Gothic Chapel, and a Superintendant's Cottage: a large receiving tomb is ready for those who may have occasion to employ it while they are erecting their own. The very large dwelling house is to be converted into one spacious room large enough for any procession to take shelter in; this and the Chapel will be warmed in winter. In addition, there are spacious coach houses, so that as far as we could judge nothing has been neglected, and the public, while they will be amply accommodated, will have cause to remember those by whom this much needed improvement has been effected.

The Cemetery is one hundred feet above the Schulykill, which washes it on the West, and is bounded on the East by the ridge road turnpike; the latter affords ready access in all seasons. East of the ridge road the company have a small farm which has been converted into a flower garden and nursery; its superintendant, Mr. John Sherwood, formerly gardner to Mr. Platt, will supply shrubbery for lot holders, and at their request keep their lots in perpetual bloom with roses, &c.

The company will no doubt receive a charter from the present Legislature, and give deeds in fee simple ferever to purchasers, subject to wholesome rules satisfactory to all; the price, considering the heavy outlay, is esteemed very reasonable. A very large number of citizens have purchased, and every day adds to their number.

New-York and Baltimore, by municipal regulations have enacted that no burials shall take place within the city; it behoves all of us to anticipate such a law here, and by the removal of our deceased friends to this spot, or by preparation for our families, make arrangements for their quiet repose hereafter TOGETHER. We observed that families, brothers, sisters and cousins, &c., are selecting their lots in the vicinity of each other, that those who were united in their lives may not be separated. Husbands are removing their deceased partners, wives their husbands, children their parents, and parents their children, from the closely crowded grave yards of the city, and with pious care depositing them where they can join them when their earthly pilgrimage is over. Already is the ground studded over with a hillock or a grave stone here and there, and we learn from the Superintendant that very many removals are immediately contemplated.

Alexander Wilson, the distinguished ornithologist expressed a natural wish that he might be buried "where the birds would sing over him;" will not our citizens all unite in heart and purse to carry his wish into execution? We understand such a proposition is entertained, and that a prospectus has been issued to transfer the bodies of Wilson, Godfrey, the undoubted inventor of the Quadrant, Rittenhouse, and Say, to Laurel Hill, and erect over them a mausoleum with suitable inscriptions. Every one we should suppose would contribute to this laudable object.—[Philadelphia Com. Herald.]

BALLOONS.—The practicability of aerial navigation has been much discussed in the recent English Journals.

We have given our readers descriptions of the construction and ascent of Mr. Green's large balloon. We now lay before them several articles on the subject, from the London Mechanics' Magazine. Some information and much amusement may be derived from the perusal of them. We commend to special notice the idea of using carbonic acid gas for ballast, and of reviving the Montgolfier balloon!!

From the London Mechanics' Magazine.

IMPRACTICABILITY OF AERIAL NAVIGATION—MONTGOLFIER'S PREFERABLE TO GAS BALLOONS.

Sir,—The subject of acrostation has been more fully and better discussed in your periodical than in any other; but although your intelligent correspondents have, during the last twelve years, supplied you with numerous observations and ideas on the subject, nothing essentially new or important has been elicited. This comes from the sterile nature of the thing itself. No one, as the homely saying is, can "make a silk purse out of a sow's ear." It is quite astonishing to observe how so many men of good sense can talk of propelling and *directing* a balloon through the air, on principles derived from "the way of a ship on the sea!" A vessel either on or in a mass of water can be propelled even *against* a current of that water, because the density of the medium allows of a power being applied of a velocity within

the reach of our physical organs to produce. But for a power to be applied (in an analogous way) in the car of a balloon, against the air, in which the whole machine is immersed, it must have six hundred times the *velocity* of the stroke which will produce the same effect upon the water. Some persons say, "we will take up a steam-engine," &c. But the more weight you take up, the greater must be the dimensions of your balloon!—After all—for it is loss of time to argue such a matter—it is evident that no power can draw a balloon against the slightest zephyr, but one which would *place the car and the balloon on a horizontal line together*, like a horse drawing a cart. With regard to the elongated and fish-like shapes that have been so often proposed, the fallacy is still more afflicting. When there is no power of propulsion through the fluid. how can the position of the elongated body be decided?—Even a barge going down a river *along with the stream* has not the least power of steerage by the rudder, because it does not go *through* the water, but *with* it: without *external* power applied, either of traction, oars, or wind, it goes along sideways, or any way, just as it may happen. Another fallacy in the ideas connected with an elongated fish-like balloon is also of a serious nature, setting aside the *physical impossibility* of propelling it. How is it to be kept in a horizontal position? A balloon of such a shape (like Egg's the Pall-Mall gun-smith, or of Col. Lenox's "Aerial Ship,") being filled with gas and set up without any load, would certainly be liable to rise in any way but the one desired. If to prevent its bursting by the expansion of the gas, it were only three quarters or two-thirds full, it is ten to one but that it would rise up *endways*. If a net, car, &c., were to be attached to it, with a load of passengers, it would double up into the shape of a crescent; that is, if the gas did not rush *to one end* (which is most likely,) and so defeat all the fish-like calculations of the constructors!—A stout back bone to the fish-balloon might prevent the doubling up I speak of, but it would not save the chance of going up endways, much to the inconvenience of the travellers in the car beneath. But it is absolute waste of time to dwell on such nonsense.—It is a pretty thing to see a balloon ascend when you are near it at the time, and will answer the purposes of the proprietors of public gardens, &c. The near view of any large mass in motion, such as a ship launched, a huge tree falling, &c., convey a novel and peculiar feeling to our senses.

In 1810, Madam Blanchard, the widow of Blanchard who, with an Englishman, crossed in a balloon from Dover to Calais, arrived at Naples with her balloon. An ascent was ordered by the King (Murat) to take place from the *Campo Marte*, on an occasion when there was to be a grand review of troops. In consequence of my known chemical propensities, the King ordered the talented Giovanni Dall' Armi and myself to make all preparations, and superintend the inflation and ascent of the balloon. It was settled that *I* was to have ascended with Madam Blanchard; but owing to the exhibition having been countermanded on account of the weather, after operations had began, and then reordered, the balloon was not sufficiently buoyant at the hour appointed to carry two persons, so *I*, to my great chagrin, was left behind. Madam Blanchard had in her possession a Montgolfier baloon, which she sold me for 40*l*. With that balloon I purposed making a series of experiments upon that principle alone, of which, in my opinion, balloons can ever be made to take advantage, which is, various currents of air crossing each other at differant elevations in our atmosphere.

A balloon filled with hydrogen gas, provided with sand-bags for ballast, &c., can only rise by throwing out ballast, and descend by allowing an escape of gas. It is evident that these operations cannot be repeated beyond a certain limit, because you have no means of replenishing the ascending power. A Montgolfier balloon is inflated and rendered buoyant by means of flame, just like the paper, "fire balloons" of our tea-garden entertainments. A Montgolfier balloon, made of cotton "broad cloth," forty feet diameter, will carry up four persons. A circular grate or fire-place, of three feet in diameter, is suspended concentrically in the inferior opening of the balloon; which opening is about seven feet in diameter.—Around this opening is a wicker gallery (instead of a car, as in the gas balloons.) The persons in this gallery, being provided with a store of little faggots of dry wood and a long-handled fork, keep up the fire by supplying it with fuel. When it is desirable to descend, the fire is allowed to wane; an increased fire occasions a rapid rise. Thus it is absolutely at the discretion of the aeronauts to rise or fall, as long as their fuel endures. The fire-grate is provided with a hinged cover, so that it may be extinguished at once, or the bottom of the grate may be let out, so as to vacate all the fuel. With such a balloon, even when the fuel is *all* expended, a fresh supply may be had almost any where; and thus the search after various currents of air may be far more successful than with one of hydrogen gas. I look upon the Mongolfier balloon as less liable to accident than the other, which is liable to burst, or to be ignited by an electrical discharge from the clouds, or to fall too rapidly through any over-opening of the valve.—The flame from the fire-place of a Montgolfier balloon ascends vertically into the interior without the slightest vacillation. The flame of a candle in the car of a gas balloon could not move were it blowing a gale of wind, because the balloon goes *with* the wind. But still less can the flame *in the interior* of a Montgolfier balloon waver. To protect the cotton tissue of the balloon from sparks, it is quite sufficient and effective to saturate it with a solution of alum. The circumstances through which I lost my Montgolfier balloon, before it came into my possession, are not worth detailing. It was seized at the Turin custom-house as English cotton goods. I, however, made a smaller one myself, by experimenting with which I have arrived at the above conclusions; but shortly having other things to attend to, there ended my ballooning project. But if any one would now be at the expense of constructing such a balloon, I should be very happy to furnish him with my *modicum* of knowledge and assistance on the occasion, and be the first to make a demonstration of *that which I conceive to be the best method of ascending and passing through the air by means of a balloon.*

Marshal Jourdan was commander-in-chief of the French army in Flanders when a balloon was made available to the taking of all the plans of the enemy's lines. I have conversed with him at length on the subject, and he allowed that a Montgolfier might be constructed, filled, elevated, and applied to all such purposes, when it would be impracticable to procure hydrogen gas, or a balloon sufficiently impervious to retain it. The Montgolfier requires no varnish. Gas escapes through all those hitherto applied.

Almost the only useful purpose to which I could think of applying an hydrogen gas balloon would be the establishment of a communication between a stranded ship and a lee-shore. About three years ago I addressed you a letter on that subject, but I cannot say in what number it appeared. I gave you a detailed description of the apparatus required. The Portable-gas Company compress thirty volumes of gas into one, into vessels of thin sheet-iron with ovoidal ends. Such a vessel charged with one hundred cubic feet of the best gas, might easily be fitted into the bottom of a large cask. The empty balloon being placed over it, and communicating by a tube and stop-cock. In the same cask might be arranged a long cord of the lightest and best materials. The whole apparatus, properly made and packed, would always be ready on deck like a mere water-cask. The balloon once up, by adding more rope to the thin one belonging to it, must come at last into contact with the edge of a cliff, or with the surface of any lee-shore.—The balloon might also be made to take up a small grappling, composed of three or four shark-hooks tied back to back. I fear, however, that there would be considerable risk of the balloon's being torn by the yards, &c., of the ship before it could be got clear of it.—In the case of a low coast without cliffs or high rocks, an empty water-cask, protected by sacking, &c., would take a line on shore as well as a balloon. Apropos of water-casks and provision-casks, I have suggested many years ago, that if, as these become empty, they were to be bunged up and stowed so as not to be washed away, their buoyancy would prevent the vessel from sinking even when she was full of water. All the trouble is in well bunging up the casks when they become empty.

Yours, &c.

F. MACERONI.

September 10, 1836.

From the London Mechanic's Magazine.

TRACTABILITY OF BALLOONS—COMPARATIVE SAFETY OF MONTGOLFIER AND GAS-BALLOONS, ETC.

Sir,—Your correspondent, "Umbra Montgolfieri," takes, on the whole, a fair view of the ballooning subject of my last communication; but *some* of his remarks and facts require emendation.

I do not state that no degree of motion whatever can be imparted to a balloon through the "vigorous manœuvering" of properly constructed flappers by the persons in the car. But it must be in a *perfect calm*, such as "Umbra" himself says

that Messrs. Roberts were favored with in June, 1784, when they travelled 2000 yards in 35 minutes by means of their oars. This *may* be; but I should like to have *seen* the operation! I have a shrewd suspicion that the air was not *perfectly* quiescent; and that what little motion it had was in favor of the rowers. "Umbra Montgolfieri" did not *see*, either this operation or that of M. Testu; I wish he had! The flying gods and devils of our pantomimes are seen to "apply themselves most vigorously to manœuvring their wings;" but I doubt its being through their aid that they fly from one side of the stage to the other!

With regard to the comparative danger of the fire and the gas balloon, "Umbra" is not quite correct in cases which he quotes. Pilatre de Rozier lost his life by ascending with a double, or rather with two balloons—one of hydrogen gas, the other *a la Montgolfier*. In this strange conceit, I forget which of the two he placed uppermost, but the fact was, that the gas caught fire and exploded so as to destroy the whole concern. I have no encyclopedias to refer to, but I remember, thirty years ago, reading the account of this catastrophe, as given in the *Philosophical Transactions* by Mr. Cavallo, the electrician and chemist, who was an eye-witness of it. When Blanchard and an Englishman passed in a gas-balloon from Dover to Calais, they were dragged through the water more than half of the distance; although, to increase the buoyancy of the balloon, they divested themselves even of their clothes.

Madame Blanchard was killed at Paris (in 1816, I think) through the gas taking fire. It is true, the car was illuminated, and I think she had some fireworks to throw down! Mademoiselle Garnerin, whom I also knew very well, shared a similar fate, though I do not remember the particulars. Her father, Garnerin, a professed aeronaut, came to England some years ago, about a *pasteboard gun* (!) of his invention.

The most distinguished of all the early aeronauts was the rich and scientific experimenter, Count Zambeccari, of Bologna, who was a near relation of my father. The Count constructed several balloons, both *a la Montgolfier* and gas. At that time it was a serious expense to fill a balloon with gas, which was obtained by the decomposition of water by means of iron and sulphuric acid. I have above noticed the circumstance of Blanchard and his companion having been dragged through the water, on their way from Dover to Calais. I now mention the name of Zambeccari, in order to draw the attention of your intelligent readers to a circumstance which it would be well to investigate, before our aeronauts again venture in a gas-balloon to cross the sea. This distinguished experimentalist made several ascents in a Montgolfier balloon, with which he exhibited the faculty of continually rising and falling in a most satisfactory manner. With his gas balloon, however he was twice in imminent danger of perishing. A south-west wind carried him from Bologna over the Adriatic sea. No sooner had the balloon got fairly over the water about six miles from shore, and although it was at the height of 5000 feet, it suddenly began to descend. In vain did the aeronaut hasten to throw out his ballast, for notwithstanding the ejection of every particle, together with some provisions, bottles, extra clothing, and even barometer, thermometer, &c., the car soon touched the water, and Zambeccari, half drowned, was taken up by his boats. Struck by this apparent anomaly in aerostatics, and with a view of discovering some circumstance that might account for the fact which he had witnessed, Zambeccari, nothing daunted, made another ascent, with a south-west wind which speedily put him on his way to the shores of Dalmatia. He had some fast going feluccas to attend him, which, with all canvass set and nimble oars, followed him with almost the swiftness of the seagull's flight. The balloon was kept as full of gas as safety from expansion would possibly allow. But all would not avail—every grain of ballast had been thrown out, besides all other objects, as on the former occasion: the balloon descended on to the waters, as though overcome by an invincible attraction, and the intrepid philosopher, many miles a head of his friends in the feluccas, was dragged along with little hopes of being overtaken. I forget whether he was overtaken by one of his own boats, or rescued by some other vessel. He remained, however, so long a time in the water, or rather "between wind and water," that his hands and feet were "frost-bitten," and his health impaired for a long time after. I do not pretend to furnish any clue to the explanation of the above phenomena, which we here see repeated on three very marked occasions. *Perhaps* it is no phenomenon at all, but was merely the result of accidental causes, which escaped the notice both of Blanchard and Zambeccari. I do not see how any affinity and relationship between the hydrogen gas in the balloon, and that component of the water, could ever cause the effect described. We are not prepared to reason upon a thing before we are well assured that it, in fact, exists.

"Umbra Montgolfieri" proposes to construct the lower portion of a fire balloon of asbestos or wollen stuff. This is not necessary. The solution of alum in water renders paper, cotton, or linen, quite incombustible. The balloon (or any balloon) may be made so as of itself to answer the purpose of a parachute, by fixing a broad hoop of beechwood around its meridian. I am aware of the non-conducting qualities of silk and of hydrogen gas; but should an electric spark happen to pass through the mixture of gas and atmospheric air, which occurs on every opening of the valve, I should not like to be in the car at the time.

Should any such Aeronautic Club, as is proposed by "Umbra," ever come into existence, I shall be glad to furnish all the assistance in my power; but I really do not think that *any kind of balloons* is worth the attention of men, who wish to devote their time and labor to objects of utility and benefit to mankind.

I have the honor to be, Sir,
Your obedient servant,
F. MACERONI.

From the London Mechanics' Magazine.

IMPROVED DOUBLE BALLOON, WITH HYDROGEN AND CARBONIC ACID GASSES.*

Sir,—I take the liberty of sending you the following description of a machine which has occurred to me. Should you deem it worthy of insertion, it may at least suggest an improvement in ballooning.

I am, Sir,
Your most obedient servant,
ROBERT MUNRO.

August 24, 1836.

In the accompanying figure A is a balloon of the common form and material filled with *coal gas*. B. is another of smaller dimensions filled with *carbonic acid gas*, until its weight is nearly sufficient to prevent the rising of the machine; C. a car suspended from the upper balloon in the usual way; D, a slender steel-rod, or a rod of twined bamboo canes passing perpendicular through these and fastened to the silk at A and B; E, a sail fixed to D; close to the ends of the rod there is a valve at each extremity opening inwards, and acted upon by a cord running alongside the rod and affixed within the car.

This machine does not require much explanation here; it need only be said, that while the contents of the upper balloon are near the *lightest* of aeriform fluids, those of the lower are the *heaviest*; consequently they will each exert a power acting differently. When the machine is afloat in the atmosphere, by permitting a certain quantity of gas to escape through the upper valve, this will diminish the ascending motion, which then yields to the heavier, and by acting simularly upon the lower valve in proportionate quantity of the carbonic acid gas will fall down and the effect will be reversed; and by a nice adjustment of both the powers, may be made to balance, and the machine will become *stationary* at any elevation.

Now, as the rod is continually kept in a perpendicular position by the opposing powers, and as the whole was connected together and kept uniform by it, it is obvious that when the machine is stationary it would move horizontally before any force opposed to it, consequently a sail might be applied, though the surface of the machine itself might be sufficient to cause it to move before the wind.

The above arrangement would be very suitable for taking plans and bird's-eye views. It is in the power of the voyager in the ordinary balloon to cause it to rest at any elevation, but this only by a very inconvenient process, and one that is not always practicable; but this advantage is possessed by the present to such extent, that the mere adjustment of an index may

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*The figure is omitted as the arrangment of the apparatus can easily be conceived.

cause the effect; but all independent of the *safety* of it, which would bear the most severe breeze as its becoming disarranged or tossed, would be impossible.

I mention, though well known, that carbonic acid gas is most easily procured, and at an expense far below that of coal gas or hydrogen.

From the London Mechanics' Magazine.

BALLOONING.

Sir,—It gives me great pleasure to perceive that an attempt is about to be made to turn air-balloons to some useful account; and that the conduct of the undertaking is likely to be intrusted to the active mind and enterprising spirit of Golonel Maceroni. Perhaps the whole amount of utility to be derived from air-balloons is very limited; but they are not on that account to be disregarded. We must not despise small things; the happiness of mankind, such as it is, is made up of a number of small enjoyments. It is a pity, I had almost said it is a disgrace to an intelligent nation, that this interesting art should be allowed to remain in its present worse than useless state. At all events, the mere attempt to advance it is honorable; whilst the failure can be no disgrace.

The difficulty consists simply in this;—The resistance is greater than any power that has been hitherto applied to overcome it. To meet this difficulty, we must *increase the power* and *decrease the resistance.*

With respect to the power, I would refer Colonel Maceroni, and your readers generally, to a paper on that subject in No. 637 of the *Mechanics' Magazine.* To decrease the resistance, the present globular form of the balloon must be rejected altogether; nothing can be done whilst this shape is retained. It appears to me that an oblate cone offers the largest capacity with the smallest resistance, or rather a cylinder with conical ends. The cylinder might be kept in a compressed form by connecting the opposite sides by means of cords in the interior of the balloon, so as to allow of its being distended by the gas in a lateral direction only. Colonel Maceroni objects, that the cone might rise endwise, or any way but the desired one. This may be easily guarded against by having the interior divided into several compartments, so as to prevent the gas from shifting.

I am convinced that the difficulties and obstacles which at present appear to stand in the way of this undertaking, may be over come by ingenuity and perseverance—and that in *calm weather* a balloon might be conducted with safety and certainty in any direction that the æronaut might desire to steer.

I am, Sir,
Your obed't serv't,
T. S. Mackintosh.

Sept. 26, 1836.

From the London Mechanics' Magazine.

CONSTANT CURRENTS OF WIND AT HIGH ALTITUDES.

Sir,—I think that if, as has been lately stated, there are at different altitudes opposite currents of air always blowing in the same direction, aerostation may, notwithstanding all that has been said about it, prove a pleasant but sure method of travelling to the continent and back again. Now, as is well known, directly any portion of the atmosphere gets heated, it becomes rarefied, and as such it is lighter than it was before, and consequently it rises, and the cooler air rushes into the space that it before occupied, and thus forms a wind. As the sun may be considered always over the equator, the air directly under it, or that in the middle of the torrid zone must become considerably warmed, and consequently rise, and there must be a corresponding rush of cooler air below from the north and south to supply its place. That there is such, is known in the form of the trade winds, and the reason of their not being due north and south is owing to the whirling of the earth; but the heated air becoming cooled as it ascends, must in the upper regions form an opposite blast to the trade winds; and it has been clearly seen that there is such, by large masses of clouds being obsesved rapidly moving at a great height in a contrary direction to the wind, at the surface of the earth. A balloon taken to almost any part, within thirty degrees of the equator, would quickly ascertain at what height the change took place, and *ballooning* might prove of utility out there, if it never does in this country. Although the winds near the earth in the temperate zones are not, from various local circumstances, very steady, there is great probability that there may be differnt currents at some height, and it could be easily ascertained by a few aerial trips made by an experienced person on purpose for that intent.

With respect to guiding balloons by sails, supposing that by placing them obliquely you were enabled to obtain a little side way, it would, I think, be too trifling, compared with the length you would have gone in the same time with the wind, to be of any practical advantage, and to compensate for the greater size and expense of the balloon. It is as unreasonable, in the words of Dr. Arnott, to suppose that an insect, driven along ar the rate of eight or ten miles an hour by a river torrent, should have power to stop or sail against the stream, as a man in a balloon by means of wings or sails, could resist or change a motion in the air generally exceeding fifty miles an hour.

I remain Sir,
your obe't serv't.
Vincent Brown.

Mummy Cloth.—In the mummy pits and sepulchres of Egypt, there are such immense quantities of the ancient cloths, in which mummies were enveloped, that the article has become an object of speculation in Europe, for the use of paper manufacturers. These clothes are linen, and sometimes possess great beauty and delicacy of texture. It is observed that the warp has twice or thrice, and often four times as many threads in an inch of cloth, as the wool has. Modern weavers consider the circumstance as a proof that the Ancient Egyptian weavers threw their shuttles with the hand.

A very good article appears on the French side of the *Courier de la Louisiane* yesterday, relative to steam ships across the Atlantic; and though we disagree with the writer in the inferences which he draws, we may be permitted to avail ourselves of the facts which he has industriously accumulated, in our own manner.

There are now regular lines of steampacket ships from Falmouth in England to Corunna in Spain, to Lisbon in Portugal, to Cadiz and thence to Gibraltar, Malta, Corfu and Alexandria in the Mediteranean. There are steampackets faom London to Dublin, to Edinburgh, to Dover, to Havre, Antwerp, Hamburgh, Bordeaux and various other places. From Liverpool, there are steamboats to Dublin, Bristol, Bordeaux and other places. From Southampton also in England, there are lines to Havre and other ports of France. And from Hull, Dover and Brighton, there are similar lines across the English channel.

From Havre there are regular steamboats to the places above mentioned and to Hamburg and various ports on the continent. Also from Hamburg, Rotterdam, Ostend, Dunkirk, Boulogne, Bordeaux and Dieppe, there are similar lines. Even in Russia, there are steamboats from St. Petersburg to Riga, Stockholm, Lubwick and Hamburg.

In short there are steamboats or ships plying between the principal ports of the German, English and Irish channels, the Baltic and Mediterranean seas, and the bay of Biscay. There are also steamboats in the Red sea, the Persian gulf and Indian ocean.

In this country there are steamboats on the ocean from New-York to Boston and to Charleston; and from Boston to Portland.

But it is remarked that the voyages in every instance may be considered coastwise, or that at least no boat is longer from land than four or five days; and therefore concluded that coastwise voyages alone can be performed by steamboats or ships. It is known the ancient navigators never performed other than short voyages till the invention of the compass; it may be inferred that steam is now in its infancy as sails had then been; and that invention will again second an ocean voyage. It is admitted that a steamboat sailed in 1825 from Falmouth in England to the Cape of Good hope, there took in fuel and sailed to the mouth of the Ganges in the East Indies, making the whole voyage in 105 days; and we yesterday remarked in the Standard, that a steamboat that had sailed from London arrived at Oahu in the Pacific ocean, after a passage of 105 days. But it is supposed that because an attempt was not made afterwards to establish regular lines of steamboats between London and Calcutta *via* the Cape, therefore the first attempt was successless—although it should rather have been inferred that though the practicability of the project was fairly proved, the ordinary trade and travel between those ports could not defray the necessary expenses of such a long voyage.

A vessel of war carrying 120 guns is usually 190 feet long. The steamboat North America on the Hudson river is 222 feet long. The steamships intended for the line between Liverpool and New-York, are 194 feet long,

30 wide, and 18 deep. There will be two engines of 400 horse power.

Another objection to the use of steamships on the ocean, is the space necessarily occupied by the machinery and fuel, to the displacement of cargo. This is but in appearance; for the size of the steamships is increased beyond the ordinary tonage of merchant vessels, so as to give greater space; and the objection relative to the quantity of fuel necessary for long voyages would certainly be obviated in the establishment of lines from New-Orleans to any port in Europe or South America, as there are several intermediate places where fuel could be supplied for 10 or 12 days, were such a quantity required.

The expense of constructing and equipping steamships is another objection; but as the profits attending the superior facilities and intercourse of such ships would amply cover all outlays, the objection is not more valid against steamships compared with common packets, than with common packets compared with transient vessels.

From the Farmers' Register.

COAL DEPOSITES NEAR FARMVILLE.

FARMVILLE, OCT. 22, 1836.

At a time when the whole country is so much interested on the subject of railways, it may not be improper, to trouble you once more, in relation to the coal depositesites in this neighborhood. I feel the more excusable for this, inasmuch as, in my previous communications, I have expresed so much doubt with regard to the existence of coal in large quantities. I am happy now to state, that my doubts are nearly removed, and that I think I have good reason to believe, that we have in this vicinity, a coal-field of incalculable value. Should this opinion prove correct, much importance will be added to the construction of railroads through this place; more especially, if the rumor be true, that there is considerable failure in some of the Chesterfield coal mines, as to the quantity of coal yielded.

I went on an excursion, a few days ago, with a party of gentlemen, with a view of inquiring for and examining the inditions of coal in the neigeborhood. On the Bizarre lands, belongiog to the estate of the late Vichard Randolph, we found a place in which there were several veins of dead coal on the surface, with large strata of shale in ervening; and in an adjacent ravine, where there had been a little digging, we found the veins of coal much increased, and those of shale greatly diminished. Among the dead coal here, there were many lumps of good coal. The whole company supposed that at this spot, there was afforded the promise of a most valuable deposite of coal, if the veins continue to approximate as rapidly below as on the sides of the ravine. This spot is on the river cliff, and very near the river.

We also found on the lands of Mr. James Anderson two other strata, both of which, we thought, afforded undoubted prospects of great value. One of these in a ditch, and longitudinly with the ditch about ten or twelve feet. The ditch was cut from east to west, and nearly all the strata in the neighborhood have their course from north-east to south-west. I mention these circumstances, because we failed in meeting the labor and implements which we expected—and, with a poor grubbing hoe and our own poorer personal labor, we were unable to ascertain the size and dip of the vein. This inebility, however, would augur favorably, as I have always been able very speedily to ascertain these matters with small veins. With regard to the size of this vein, there was some diversity of opinion. All concured in the opinion, that it would be well worth working. My opinion is, that it must be, at least, six feet through, for I have never seen in the whole field any vein of coal not running north-east and south-west, and whose dip was not either to the north-west or south-east. The quality of the coal was also better than I have ever seen so near the surface. This place is about four miles from Farmville and a little more than one from the Appomattox.

We have recently learned that there are promising out-runnings of coal in other places, which we will, as soon as practicable, visit, and report to you, if we think them worthy of notice.

W. S. MORTON.

Agriculture, &c.

From the Farmers' Register.

ECONOMICAL METHOD OF KEEPING HORSES.

BY HENRY SULLY, M. D.

Having received innumerable letters from gentlemen who keep horses, requesting a description of my plan of feeding, I shall save much trouble both to others as well as myself, by laying my system before the public. Having pursued the plan above 17 years, I am enabled to appreciate its full value, and, being perfectly satisfied of its superior excellence, I hope to continue the same as long as I keep horses.

Most people who know me will allow, that horses in my employ enjoy no sinecure places, and few people can boast of their cattle being in better working condition or more capable of laborious undertakings than mine.

The loft above my stable contains the machinery for cutting chaff and grinding corn. From this loft each horse has a tunnel of communication with the manger below, and a tub annexed to each tunnel in the loft for mixing the ingredients composing the provender.

There should be no rack in the stable, because this may tempt the groom to fill it with hay, and thus by overloading the horses' stomach, endanger his wind, to say little of its expense and waste, for it is a well known fact, that if a horse has his rack constantly replenished with hay, he consumes and spoils upwards of 30 lbs. per day.

The manger with which the tunnel communicates should have cross-bars, of firm oak, placed at the distance of ten or twelve inches from each other, to prevent the horse from wasting his provender in search of the grain it contains, and this space between the cross-bars, allows the horse plenty of room to take his food.

The chaff cutter I make use of, is manufactured by Mr. Wilmott, a very ingenious mechanic, who resides about five miles from Taunton, on the road to Wiveliscombe. He also provides corn bruisers, of the best construction, and any person keeping three or four horses, will save the prime cost of his machinery the first year of his trial, and the horses themselves, thus fed, to use the language of horse keepers, will always be above their work.

When the provender is thoroughly mixed in the tub, previously weighing out each ingredient, the mixture should be given in small quantities at a time, many times a day; and at night, enough is thrown into the tunnel to last till morning. This process will be found of very little trouble to the groom, who will only have to go into the loft six or eight times a day. As the component parts of the provender are weighed separately for each horse, we are certain he has his just proportion; and I have hereunto annexed my scale of feeding in four classes, for it sometimes happens that some of the ingredients cannot be procured, and at other times that it may be better to substitute others; but, whatever grain is given, it should always be bruised or coarsely ground, and carefully weighed out; for by weight alone, is it possible to judge of the quantity of farinaceous substances the horse consumes; it being well known that a peck of oats varies from seven to twelve pounds; consequently if the provender were mixed by measure there would be frequently an uncertainty as to quantity.—Wheat varies from 16 to 12; Barley, from 13 to 16; Peas, from 17 to 15; Beans, from 17 to 15 per peck. And as wheat, beans, peas, barley, and oats, are equally good, and of very trifling difference in price when their specific gravity is taken into consideration, I am equally indifferent which grain I use, but I should always prefer boiled or steamed potatoes for hard working horses, to be a component ingredient, whenever they can be procured.

As I call all ground or bruised grain of whatever description, *farina*, it will be so distinguished in the following

SCALE.

	Class 1	Class 2	Class 3	Class 4
Farina, consisting of bruised or ground peas, wheat, barley, or oats,	5 lbs.	5 lbs.	10 lbs.	5 lbs.
Bran, fine or coarse pollard,	—	—	—	7 lbs.
Boiled or steamed potatoes, mashed in a tub with a wooden bruiser,	5 lbs.	5 lbs.	—	—
Fresh grain,	6 lbs.	—	—	—
Hay cut into chaff,	7 lbs.	8 lbs.	10 lbs.	8 lbs.
Straw, &c. in chaff,	7 lbs.	10 lbs.	10 lbs.	8 lbs.

Malt dust, or ground oil cake,	—	2 lbs.	—	2 lbs.
Salt,	2 oz.	2 oz.	2 oz.	2 oz.

By the above scale it will be seen, that each horse has his 30 lbs. of provender in 24 hours, which, I maintain, is full as much as he can eat. The two ounces of salt will be found to be an excellent stimulus to the horse's stomach, and should, on no account, be omitted. When a horse returns from labor, perhaps the groom will see the propriety of feeding him from his tub more largely, in order that he may be the sooner satisfied, and lie down to rest.

Whenever oat straw can be procured, it is generally preferred; and some like to have it cut into chaff without thrashing out the oats; but this is a bad plan, for in preparing a quantity of this chaff, unequal proportions of oats will be found in each lot, so that one horse will have too large a portion, whilst others have less than they ought, although the portions are accurately weighed.

The only certain method, then, is, to let the grain, of whatever description, be weighed, separately from its straw, and the keeper of cattle will soon satisfy himself that his cattle are in want of nothing in the feeding line. Many people object to potatoes, and think them unfit for working horses; but, from many years' experience, I am enabled to recommend them as a constituent part of the 30 lbs., and am convinced, that it is as wholesome and nutritious a food as can be procured for laboring horses, which are called upon sudden emergencies to perform great tasks, as has been abundantly proved by Mr. Curwen, M. P., who kept above one hundred horses on potatoes and straw, and always found that their labors were conducted better on this than any other food. See Curwen's Agricultural Hints, published 1809.

Wiveliscombe, Somerset, Sept. 12, 1836.

MEMORANDUM OF AN EXCURSION TO THE TEA HILLS, WHICH PRODUCE THE DESCRIPTION OF TEA KNOWN IN COMMERCE UNDER THE DESIGNATION OF ANKOY (NGANKE) TEA; BY G. J. GORDON, ESQ.

"Having been disappointed in my expectations of being enabled to visit the Bohea hills, I was particularly anxious to have an opportunity of personally inspecting the tea plantations in the black tea district, of the next greatest celebrity, in order to satisfy myself regarding several points relative to the cultivation, on which the information afforded by different individuals was imperfect or discordant.

"Mr. Gutzlaff accordingly took considerable pains to ascertain for me, from the persons who visited the ship, the most eligible place for landing with the view of visiting the Ankoy hills; and Hwuytow bay was at length fixed upon as the most safe and convenient, both from its being out of the way of observation of any high Chinese functionaries who might be desirous of thwarting our project, and from its being equally near the tea hills as any other part of the coast at which we could land."

"The wind being unfavorable, we made rather slow progress by rowing, but taking for our guidance the masts of some of the junks which we observed lying behind a point of land, we pulled to get under it, in order to avoid the strength of the ebb tide, which was now setting against us. In attempting to round the point, however, we grounded, and soon found that it was impossible to get into the river on that side, on account of sand banks which were merely covered at high water, and that it was necessary to make a considerable circuit seaward to be able to enter. This we accomplished, but not till 1 A. M. At this time a light breeze fortunately springing up, we got on very well for some time, but were again obliged to anchor at ¼ past 2, from want of water. As the tide rose, we gradually advanced towards the town of Hwuytow, till we came to one of those bridges of which there are several along the coast, that extend over wide sand flats that are formed at the mouths of the rivers. These bridges are constructed of stone piers with slabs of stone laid from pier to pier, some extending over a space of 25 feet and upwards, and others being from 15 to 20 feet span. As the length of the bridges cannot be less than three quarters of a mile, the whole is very striking as a work of great labor, if not exhibiting either much skill or beauty. We were informed by some boat people that we should not find water to carry us beyond the bridge, but observing some tall masts on the other side, we resolved on making the experiment, and pushing on as far as we could. It was almost dark when we passed under the bridge, and we had not proceeded far when we were again aground. This, however, we attributed to our unacquaintance with the channel, and as the tide floated us off, we continued advancing, notwithstanding, the warning of a friendly voice from the bridge, that entreated us to return to the town, promising us comfortable quarters, and a guide, &c. Being rather distrustful of the motives of this advice, however, we proceeded for some time longer but at length found it impossible to proceed farther, the ebb having at the same time commenced. We therefore spread an awning, and prepared to make ourselves as comfortable as possible for the night. The day had been the warmest we had experienced for a month past, but the night was very cold, and our boat, as may be imagined, far from commodious for so many people. At daylight, we found that there was not six inches of water in any part of the channel, and from the boat we stepped at once upon dry sand. The survey from the bank showed plainly that it was impossible to proceed any further by water. We accordingly prepared to march on foot, taking with us three lascars, who might relieve each other in carrying our cloak-bag of blankets and great coats, as well as some cold meat. We ordered the people to prepare a meal as fast as possible, intending to make a long stretch at first starting, and Mr. Nicholson was directed to remain in charge of the boat with five lascars, to move her down under the bridge on the return of the flood, and there to await our return for four or five days. Crowds of people now began to gather around the boat, moved by mere curiosity. Mr. Gutzlaff induced some of them to get ducks and fowls, for the use of the boat's crew, and strange to say, prevailed on one man to become our guide, and on two others to undertake to carry our baggage, as soon as we should be a little farther off from the town, and out of the way of observation."

"Skirting the town of Hwuytow, we proceeded in a N. N. E. direction, at a moderate pace, for an hour and a half, when we stopped at a temple, and refreshed ourselves with tea. Nothing could be more kind or more civil than the manners of the people towards us hitherto, and if we could have procured conveyances here so as to have escaped walking, in the heat of the day, loaded as we were with heavy woollen clothes, we should have had nothing further to desire; as it was, my feet already began to feel uncomfortable from swelling, and after another hours march, I was obliged to propose a halt, till the cool of the evening. Fortunately we found, however, that chairs were procurable at the place, and we accordingly engaged them at half a dollar each. They were formed in the slightest manner, and carried on bamboo poles, having a cross bar at the extremities, which rested on the back of the bearer's neck, apparently a most insecure as well as inconvenient position; but as the poles were at the same time grasped by the hands, the danger of a false step was lessened. We had not advanced above a mile and a half before the bearers declared they must eat, and to enable them to do so, they must get more money. With this impudent demand we thought it best to comply, giving them an additional real each. After an hour's further progress, we were set down at a town near the foot of the pass which we had to cross. There the bearers clamorously insisted on an additional payment before they would carry us any further. This we resisted, and by Mr. Gutzlaff's eloquence gained the whole of the villagers, who crowded around us, to join in exclaiming against the attempted extortion. Seeing this, the rogues, submitted, and again took us up.—Mr. G., mentioned that while we were passing through another village, the people of which begged the bearers to set us down, that they might have a look at us, they demanded 100 cash as the condition of compliance. The country through which we passed swarmed with inhabitants, and exhibited the highest degree of cultivation, though it was only in a few spots that we saw any soil which would be deemed in Bengal tolerably good; rice, the sweet potato, and sugar cane, were the principal articles of culture. We had now to ascend a barren and rugged mountain, which seemed destined by nature to set the hand of man at defiance; yet even here, there was not a spot where a vegetable would take root, that was not occupied by at least a dwarf pine planted for the purpose of yielding fire wood, and a kind of turpentine; and wherever a nook presented an opportunity of gaining a few square yards of level ground by terracing, no labor seems to have been spared to redeem such spots for the purpose of cultivation. In ascending the pass, we soon came to places where it was difficult for our bearers to find a footing, and where they had consequently to pick out their steps as they advanced. To assist themselves, they gave the chair a swinging motion, with which they kept time in raising

their feet. This was far from agreeable, and the first impression was that it was done merely to annoy, but we very soon saw that the object was different. The highest point of the pass I should conjecture to be about 1200 feet above the plain, and the descent on the north side to be nearly equal to the ascent from the south, say 1000 feet. At half past four we arrived at a rather romantic valley, which was to be our halting place for the day."

"Nov. 12th, Got into our chairs at a quarter past six, A. M., and proceeded along a narrow rugged dell towards Koeboe. Several nice looking hamlets were seen on the way. The people were engaged in reaping the rice, which seemed heavy, and well filled in the ear. In several places, I observed that they had taken the pains to tie clumps of rice together for mutual support. Sugar cane is bound in the same way, and for additional security, the outside canes are mutually supported by diagonal leaves, which serve at the same time to form them into a kind of fence. The leaves are not tied up round the stalks as in Bengal; the cane is slender, white, hard, and by no means juicy or rich; yet, abating the black fungous powder, which is very prevalent, the surface is healthy, and close growing in a remarkable degree.—We arrived at Koeboe at eight o'clock, and finding we could get water conveyance for part of the way on which we were proceeding, we engaged a boat for that purpose.—After a hearty breakfast, we embarked at 10 A. M. amidst crowds of people who covered the banks of the river at the ghat. On inquiry, we found that the river on which we were proceeding in a W. N. W. course, was the same which passed Nganke heen, and flowed to Tseuenchow foo. The boat was large, but light, and being flat bottomed, drew very little water. The stream was so shallow, that it was only by tracing the deepest part of the channel from side to side of its bed, that we were able to advance at all. This was done by poling; in several places the stream was deepened by throwing up little banks of sand so as to confine its course within a channel merely wide enough for the boats to pass through. I estimated the width from bank to bank at 200 yards, and should judge from the height at which sugar is cultivated above the level of the present surface, that the greatest depth in the rainy season does not exceed 10 feet. Being entirely fed by mountain torrents, its rise must be often very sudden, but I did not observe any traces of devastation in its course. Its name, Nganke, or 'peaceful stream,' is probably derived from this circumstance: the valley on each side seemed well cultivated, the banks being principally occupied by sugar cane. At every village the people poured out as usual to see us, vying with each other in marks of civility and kindness. The day, however, becoming very hot, we took shelter from the sun under the roof of the boat, to the disappointment of many who waded into the water to gratify themselves with a sight of the strangers. Coming at last to a high bank close to a populous town, they actually offered the boatman 400 cash if he would bring us to; and on his refusal, the boys began pelting the boat with clods and stones. On this, Mr. Gutzlaff went on deck to remonstrate, and Mr. Ryder to intimidate with his gun. Betwixt both the effect was instantaneous, and the seniors of the crowd apologized for the rude manner in which the boys had attempted to enforce the gratification of their curiosity. We had been in vain looking out all yesterday and today for a glimpse of tea plantations on some of the rugged and black looking hills close in view, though at almost every place where we halted, we were assured that such were to be found hard by."

"Arrived at Toa-be, we were hospitably received by the family of our guide, and soon surrounded by wondering visitors.

"Mr. Gutzlaff speedily selected one or two of the most intelligent of them, and obtained from them ready answers to a variety of questions regarding the cultivation of the tea plant. They informed him that the seed now used for propagating the plant was all produced on the spot, though the original stock of this part of the country was brought from *Woo-e-shan*; that it ripened in the 10th or 11th month, and was immediately put into the ground where it was intended to grow, several being put together into one hole, as the greater part was always abortive; that the sprouts appeared in the 3d month after the seeds were put into the ground; that the hole into which the seeds are thrown is from three to four inches deep, and as the plants grow, the earth is gathered up a little aroud the root; that leaves are taken from the plants when they are three years old, and that there are from most plants four pluckings in the year. No manure is used, nor is goodness of soil considered of consequence; neither are the plants *irrigated*.—Each shrub may yield about a *tael* of *dry* tea annually (about the 12th of a pound.) A *mow* of ground may contain 300 or 400 plants. The land tax is 300 cash, (720 to a dollar,) per mow. The cultivation and gathering of the leaves being performed by families without the assistance of hired laborers, no rate of wages can be specified; but as the curing of the leaf is an art that requires some skill, persons are employed for that particular purpose, who are paid at the rate of one dollar per pecul of fresh leaves, equal to five dollars per pecul of dry tea.—The fire-place used is only temporary, and all the utensils, as well as fuel, are furnished by the curer of the tea. They stated that the leaves are heated and rolled seven or eight times. The green leaf yields one fifth of its weight of dry tea. The best tea fetches on the spot $23 per pecul, (133⅓ lbs.) and the principal part of the produce is consumed within the province, or exported in baskets to Formosa. That the prevailing winds are northwesterly. The easterly winds are the only winds injurious to the plants. Hoar frost is common during the winter months, and snow falls occasionally, but does not lie long, nor to a greater depth than three or four inches. The plant is never injured by excessive cold, and thrives from 10 to 20 years. It is sometimes destroyed by a worm that eats up the pith, and converts both stem and branches into tubes, and by a gray lichen which principally attacks very old plants. The period of growth is limited to six or seven years, when the plant has attained its greatest size. The spots where the tea is planted are scattered over great part of the country, but there are no hills appropriated entirely to its culture. No ground, in fact, is formed into a tea plantation, that is fit for any other species of cultivation, except perhaps that of the dwarf pine already alluded to, or the *Camellia oleifera*. Mr. Gutzlaff understood them to say that the plant blossoms twice a year, in the eighth moon or September, and again in winter, but that the latter flowering is abortive. In this I apprehend there was some misunderstanding as full sized seeds, though not ripe, were proffered to me in considerable quantities early in September, and none were found on the plants which we saw. I suspect that the people meant to say that the seeds take eight months to ripen, which accords with other accounts. We wished much to have spent the following day the (13th) in prosecuting our inquiries and observations at Toa-be and its neighborhood, but this was rendered impracticable by the state of our finances. We had plenty of gold, but no one could be found who would purchase it with silver at any price. We therefore resolved on making the most of our time by an early excursion in the morning, previous to setting out on our return.

"We accordingly got up at day break, and proceeded to visit the spot where the plants were cultivated. We were much struck with the variety of the appearance of the plants: some of the shrubs scarcely rose to the height of a cubit above the ground, and those were so very bushy that the hand could not be thrust between the branches. They were also very thickly covered with leaves, but these were very small, scarcely above ¾ of an inch long. In the same bed were other plants, with stems four feet high, far less branchy, and with leaves 1½ to 2 inches in length. The produce of great and small was said to be equal. The distance from centre to centre of the plants was about 4½ feet, and the plants seemed to average about two feet in diameter. Though the ground was not terraced, it was formed into beds that were partly levelled. These were perfectly well dressed, as in garden cultivation, and each little plantation was surrounded by a low stone fence, and a trench. There was no shade, but the places selected for the cultivation were generally in the hollows of hills, where there was a good deal of shelter on two sides, and the slope comparatively easy. I should reckon the sight of the highest plantations we visited to be about 700 feet above the plain, but those we saw at half that height, and even less, appeared more thriving, probably from having somewhat better soil, though the best is little more than mere sand. I have taken specimens from three or four gardens. Contrary to what we had been told the preceding night, I found that each garden had its little nursery, where the plants were growing to the height of four or five inches, as closely set as they could stand; from which I conceive that the plant requires absolutely a *free* soil, *not wet*, and *not clayey*, but of a texture that will retain moisture; and the best site is one not so low as that at which water is apt to spring from the sides of a hill, nor so high as to be exposed to the violence of stormy weather. There is no use in attempting to cultivate the plant on an easterly exposure, though it is sufficiently hardy to bear almost any degree of dry cold."—[Chinese Repository.]

From the London Gardener's Magazine.

ON THE EMPLOYMENT OF CATS IN THE PRESERVATION OF FRUIT FROM BIRDS.

"Robert Brook, Esq., of Melton Lodge, near Woodbridge, in Suffolk, has four or five cats, each with a collar, and light chain and swivel, about a yard long, with the large iron ring at the end. As soon as the gooseberries, currants, and raspberries begin to ripen, a small stake is driven into the ground, or bed, near the trees to be protected, leaving about a yard and a half of the stake above ground; the ring is slipped over the head of the stake, and the cat, thus tethered in sight of the trees, no birds will approach them. Cherry trees and wall-fruit trees are protected in the same manner as they successively ripen. Each cat, by way of a shed, has one of the largest sized flower-pots laid on its side, within reach of its chain, with a little hay or straw in bad weather, and her food and water placed near her.

"In confirmation of Mr. Kendall's statement, it may be added, that a wall of vines between 200 and 300 yards long, in the nursery of Mr. Kirke, at Brompton, the fruit of which in all previous seasons had been very much injured by birds, was last year completely protected in consequence of a cat having voluntarily posted himself sentry upon it."

METEOROLOGICAL RECORD

For the month of July, 1836, kept at Avoylle Ferry, Red River, La., (Lat. 31° 10′ N. Long. 91° 59′ w,.) by P. G. VOORHIES.

JULY.

Days.	Morn.	Noon.	Night.	Wind.	Weather.	REMARKS.
1	72	86	78	calm	clear	Red River falling
2	72	88	80	..	..	
3	73	86	78	..	cloudy	
4	74	86	78	..	clear	
5	70	72	71	sw	cloudy	heavy rain and thunder at noon
6	74	87	79	calm	clear	cloudy at noon
7	75	88	78	..	..	cloudy and thunder at noon
8	75	68	78	SE	cloudy	heavy thunder at noon
9	76	89	86	calm	clear	at noon cloudy
10	76	92	86	..	..	
11	75	90	86	..	..	
12	74	89	86	..	..	
13	76	90	85	E	..	
14	75	88	84	calm	..	River rising
15	71	84	83	N light	..	evening calm
16	71	86	84	calm	..	all day
17	74	86	84	..	..	cloudy morning clear day, thudder southwardly
18	72	87	80	..	clear	thunder showers in the ev'ng from N. E. high
19	72	80	79	..	cloudy	all day, night clear
20	73	82	78	..	..	thunder in the evening
21	74	88	64	..	clear	
22	76	93	86	..	..	Red River falling
23	86	93	88	..	..	
24	82	90	88	s light	..	light flying clouds
25	82	86	84	calm	clear	
26	84	88	84	..	cloudy	all day
27	75	86	78	..	clear	evening cloudy
28	74	90	79	..	..	thunder showers in evening 3 to 5 P. M.
29	76	90	79	..	cloudy	evening light showers
30	76	84	74	..	..	foggy morning, afternoon a heavy thunder shower
31	74	83	79	..	all day	rain in the morning, cloudy all day

Red River fell this month 3 feet 1 inch—below high water mark 6 feet 4 inches.

POTASH FROM BEET ROOT.—Those persons in our country who have embarked in the business of making Sugar from Beet Root, will in all probability be remunerated for their enterprize in more ways then that derived from the mere profit of the sale of the Sugar. It appears that a new discovery has been made in France—a process which extracts potash in such large quantites from the residuum of beet root after making the sugar, as to threaten a rivalry with the produce of the American forests. M. Dubrunfaut is the discoverer. The molasses, after serving for the making of sugar, is distilled to obtain alcohol. The remainder then, instead of being thrown away, is manufactured into potash. The quantity of potash furnished by M. Dubrunfaut's process is equal to one-sixth of the quantity of sugar extracted from the beetroot. Thus, says the *Journal des Debats*, taking the amount of indigenous sugar manufactured each year at 40,000,000 kilogrammes, there may besides, be extracted from the beetroot which has served for that production, seven millions kilogrammes of saline matter, comparable to the best potash of commerce, and this too, without the loss of the alcohol, and the other produce, the fabrication of which may be continued simultaneously.—According to present prices, the 7,000,000 of kilogrammes represent a value of from 8,000,000 to 9,000,000 francs.—[Baltimore American.]

SHIP CANAL AROUND THE FALLS OF ST. MARY.—The feasibility of this project has been shown in an article which we copied, a few days since, from the Albany Advertiser; and we have lately conversed with gentlemen, possessing accurate knowledge on the subject, who fully confirm the statements made in the Advertiser. The importance of this work to Buffalo, in a commercial point of view, can scarcely be estimated too highly. A free communication with the ocean lake, would open a new and almost boundless field for enterprise. The country bordering on Lake Superior has never been thoroughly explored, but from the imperfect examination that has been made, it is known to possess great mineral wealth. Copper, in particular, abounds in inexhaustible quantities. But in addition to the rich returns that might be expected from this branch of trade alone, immense profits might be realized from the traffic in furs. This is now monopolized by the Hudson Bay and Northwest Fur Companies, and a studied mystery has been thrown around all their operations. As the demand for fur increases and the supply diminishes, prices are enhanced, and still greater efforts are made by these Companies, to prevent any intrusion upon what they regard as their privileges. They could not, however, long maintain their monopoly, if our vessels could float on the waters of the upper lake. Trading posts could be established along its shores, and the rich freight collected at these stations, could be brought to our wharves, and thrown into market, in little more than a week. The white fisheries would also afford a profitable investment for capital. We earnestly hope some measures will be taken, this winter, to effect a free communication between the lower lakes and lake Superior; and shall ere long place before our readers some statistical information, showing the value of the trade that would thereby be secured.—[Buffalo Daily Com. Adv.]

METEOROLOGICAL RECORD.

For the month of August, 1836, kept at Avoylle Ferry, Red River, La., (Lat. 31° 10′ N. Long. 91° 59′ w,.) by P. G. VOORHIES.

AUGUST.

Days.	Morn.	Noon.	Night.	Wind.	Weather.	REMARKS.
1	76	75	75	calm	cloudy	showers in the morning, heavy rain in the ev'g
2	77	86	80	calm	..	rain and thunder all day
3	74	88	82	..	clear	
4	76	82	80	SE	cloudy	heavy rain in the morning and all day and night
5	84	86	84	calm	..	
6	82	84	78	..	..	thunder and rain all day
7	76	88	84	..	..	rain in the morning and all day
8	73	90	82	..	..	
9	73	89	80	..	clear	
10	75	88	84	..	..	heavy rain al. night
11	72	88	82	..	..	
12	76	86	84	..	..	
13	74	86	76	..	cloudy	
14	73	87	76	..	..	
15	78	86	72	..	clear	
16	76	86	84	..	cloudy	heavy thunder and lightning and rain from s. E.
17	75	88	84	..	clear	
18	76	88	76	..	..	
19	75	89	76	..	..	
20	74	84	82	..	cloudy	
21	67	81	78	..	clear	
22	66	82	80	..	..	
23	80	86	84	..	..	
24	73	87	84	..	..	
25	74	89	75	..	..	little rain and heavy thunder from S. E.
26	75	89	78	sw	..	thunder and high wind at noon from S. E.
27	73	82	78	calm	clear	high winds at noon from west
28	71	84	74	..	..	
29	76	86	79	..	..	light showers at noon
30	72	82				
31						

Red River fell this month 7 feet 6 inches—below high water mark 13 feet 10 inches.

MACHINE WORKS OF ROGERS, KETCHUM AND GROSVENOR, Paterson, New-Jersey. The undersigned receive orders for the following articles, manufactured by them, of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

RAILROAD WORK.

Locomotive Steam-Engines and Tenders; Driving and other Locomotive Wheels, Axles, Springs and Flange Tires; Car Wheels of cast iron, from a variety of patterns, and Chills; Car Wheels of cast iron, with wrought Tires; Axles of best American refined iron; Springs; Boxes and Bolts for Cars.

COTTON WOOL AND FLAX MACHINERY,

Of all descriptions and of the most improved Patterns, Style, and Workmanship.

Mill Geering and Millwright work generally; Hydraulic and other Presses; Press Screws; Callenders; Lathes and Tools of all kinds, Iron and Brass Castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR.

Patterson, New-Jersey, or 60 Wall street, N. Y.

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ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order, IRON CASTINGS for Gearing Mills and Factories of every description

ALSO—Steam Engines and Railroad Castings of every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y

TO PLOUGHMEN.

THE Subscriber has upwards of three hundred acres of meadow land, in the sod, near the city of New York, that he wishes to have PLOUGHED, as early in the course of the next year as practicable. He wishes to CONTRACT for the whole, or any part. It must be ploughed four inches deep, the furrow must be turned completely over, so that the whole will lie flat—to plough a great part of this land advantageously and speedily, a double team of light cattle is preferable to one pair of heavy oxen. Provender for men and cattle can be procured on the premises. Apply by letter, directed to Anthony Dey, 53 Cedar-street, corner Nassau-street, New-York, by mail or otherwise, stating terms etc.

rr4t—f2a—48 A. DEY.

PATENT RAILROAD, SHIP AND BOAT SPIKES.

☞ The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

*** All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.

Troy, N. Y., July, 1831.

*** Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes. (1J23am) H. BURDEN.

RAILWAY IRON, LOCOMOTIVES, &c

THE subscribers offer the following articles for sale.

Railway Iron, flat bars, with countersunk holes and mitred joints,

						lbs.	
350 tons	2½	by	¼,	15 ft in length, weighing		4 $\frac{68}{100}$	per ft.
280 "	2	"	¼,	"	"	3 $\frac{50}{100}$	"
70 "	1¼	"	¼,	"	"	2½	"
80 "	1½	"	¼,	"	"	1 $\frac{25}{100}$	"
90 "	1	"	¼,	"	"	¼	"

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz. 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2¼, 2¼ 3, 3¼, 3½, 3¾, and 3¢ inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

Gudin Rubber Rope for Inclined Planes, made from New Zealand flax.

Also Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and stone block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

Mr. Solomon W. Roberts, a highly respectable American Engineer, resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron &c. ordered through us

A. & G. RALSTON.

28-tf Philadelphia, No. 4, South Front-st.

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads.

No. 264 Elizabeth street, near Bleecker street, New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlaem Railroad now in operation J25tf

AN ENGINEER,

regularly bred to the Profession in England, as well as to that of a Topographical Surveyor and Draughtsman, is desirous of obtaining employment in the United States. He has lately, for several years, been a salaried officer of one of the Principal Land Companies in the British Provinces, from the agents of which he can produce unexceptionable references.

On the subject of Railways he would feel particularly at home, having had much experience in their survey and formation while in England, and he confidently hopes that he would give satisfaction in all the other branches of the Profession.

Apply to the Office of this paper, 132 Nassau-st, or to Dr. Bartlett, at the office of the Albion, Cedar-street.

A SPLENDID OPPORTUNITY TO MAKE A FORTUNE.

THE Subscriber having obtained Letters Patent, from the Government of France, granting him the exclusive privilege of manufacturing Horse Shoes, by his newly invented machines, now offers the same for sale on terms which cannot fail to make an independent fortune to any enterprising gentlemen wishing to embark in the same.

The machines are in constant operation at the Troy Iron and Nail Factory, and all that is necessary to satisfy the most incredulous, that it is the most VALUABLE PATENT, ever obtained, either in this or any other country, is to witness the operation which is open for inspection to all during working hours. All letters audressed to the subscriber (post paid) will receive due attention.

Troy Iron Works, HENRY BURDEN.

N. B. Horse Shoes of all sizes will be kept constantly for sale by the principal Iron and Hard-ware Merchants, in the United States, at a small advance above the price of Horse Shoe Iron in Bar. All persons selling the same, are AUTHORISED TO WARRANT EVERY SHOE, made from the BEST REFINED IRON, and any failing to render THE MOST PERFECT SATISFACTION, both as regards workmanship and quality of Iron, will be received back, and the price of the same refunded. H. BURDEN. 47—tf

FRAME BRIDGES.

THE subscriber would respectfully inform the public, and particularly Railroad and Bridge Corporations that he will build Frame Bridges, or vend the right to others to build, on Col. Long's Patent, throughout the United States, with few exceptions. The following sub-Agents have been engaged by the undersigned who will also attend to this business, viz.

Horace Childs,	Henniker, N. H.
Alexander McArthur,	Mount Morris, N. Y.
John Mahan,	do do
Thomas H. Cushing,	Dover, N. H.
Ira Blake,	Wakefield, N. H.
Amos Whitemore, Esq.,	Hancock, N. H.
Samuel Herrick,	Springfield, Vermont.
Simeon Herrick,	do do
Capt. Isaac Damon,	Northampton, Mass.
Lyman Kingsly,	do do
Elijah Halbert,	Waterloo, N. Y.
Joseph Hebard,	Dunkirk, N. Y.
Col. Sherman Peck,	Hudson, Ohio.
Andrew E. Turnbull,	Lower Sandusky, Ohio.
William J. Turnbull,	do do
Sabried Dodge, Esq.,	(Civil Engineer,) Ohio.
Booz M. Atherton, Esq.	New-Philadelphia, Ohio.
Stephen Daniels,	Marietta, Ohio.
John Rodgers,	Louisville, Kentucky.
John Tililson,	St. Francisville, Lous'a.
Capt. John Bottom,	Tonawanda, Penn
Nehemiah Osborn,	Rochester, N. Y.

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawaukeag river on the Military road, in Maine. On the national road in Illinois, at sundry points. On the Baltimore and Susquehanna Railroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contocook river at Hancock, N H. Across the Connecticut river at Haverhill, N. H. Across the Contoocook river, at Henniker, N. H. Across the Southegan river, at Milford, N. H. Across the Kennebec river, at Waterville, in the state of Maine.—Across the Genesse river, at Mount Morris, New-York, and several other bridges are now in progress.

The undersigned has removed to Rochester, Monroe county, New-York, where he will promptly attend to orders in this line of business to any practicable extent in the United States, Maryland excepted.

MOSES LONG,
General Agent of Col. S. H Long

Rochester, May 22d, 1836. 19y-tf.

AN ELEGANT STEAM ENGINE AND BOILERS, FOR SALE.

THE Steam Engine and Boilers, belonging to the STEAMBOAT HELEN, and now in the Novelty yard, N. Y. Consisting of one Horizontal high pressure Engine, (but may be made to condense with little additional expense) 36 inches diameter, 10 feet stroke, with latest improved Piston Valves, and Metalic packing throughout.

Also, four Tubular Boilers, constructed on the English Locomotive plan, containing a fire surface of over 600 feet in each, or 2500 feet in all—will be sold cheap. All communications addressed (post paid) to the subscriber, will meet with due attention.

HENRY BURDEN.

Troy Iron Works, Nov. 15, 1836. 47—tf

HARVEY'S PATENT RAILROAD SPIKES.

THE Subscribers are manufacturing and are now prepared to make contracts for the supply of the above article. Samples may be seen and obtained at Messrs. BOORMAN, JOHNSON, AYRES & Co. No. 119 Greenwich Street, New-York, or at the Makers in Poughkeepsie, who refer to the subjoined certificates in relation to the article.

HARVEY & KNIGHT.

POUGHKEEPSIE, October 25th, 1836.

The undersigned having attentively examined HARVEY'S PATENT FLANCHED and GROOVED SPIKES is of the opinion, that they are decidedly preferable for Railroads to any other Spikes with which he is acquainted; and shall unhesitatingly recommend their adoption by the different Railroad Companies whose works he has in charge.

BENJ. WRIGHT,
Chief Engineor N. Y. & E. R. R.

NEW-YORK, April 4th, 1836.

Harvey's Flanched and Grooved Spikes are evidently superior for Railroads to those in common use, and I shall recommend their adoption on the roads under my charge if their increased cost over the latter is not greater than some twenty per cent.

JNO. M. FESSENDON, Engineer.

BOSTON, April 26th, 1836. NO. 1—6t.

ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)

NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

H. R. DUNHAM & CO.

4—vtf

An Engineer is desirous of obtaining a situation, on some work, either Railroad or Canal; he would have no objections to go on to any part of the United States.

Satisfactory references given as to character and capacity. Address W. H. W. at this office—postpaid. 50tf

TO CONTRACTORS

STONE CUTTERS and MASONS.

JAMES RIVER and KANAWHA CANAL.—Contractors for mechanical work are hereby informed that a large amount of Masonry, consisting of Locks, Culverts, and Aqueducts, is yet to be let on the line of the James and Kanawha Canal.

Persons desirous of obtaining such work, and prepared to exhibit proper testimonials of their ability to execute it, will apply at the office of the subscriber in the city of Richmond.

Stone Cutters and Masons wishing employment in the South during the winter months, may count with certainty on receiving liberal wages, by engaging with the contractors on the work

CHAS. ELLET, Jr., Chief Eng. J. R. & K. Co.

Richmond, Nov. 29, 1836. 51—6t

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens	Ames' superior back-strap Shovels		
150 do	do	do plain	do
150 do	do	do cast steel Shovels & Spades	
150 do	do	Gold-mining Shovels	
100 do	do	plated Spades	
50 do	do	socket Shovels and Spades.	

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.
No. 2 Liberty street, New-York.
BACKUS, AMES & CO.
No. 8 State street, Albany

N. B.—Also furnished to order, Shapes of every description, made from Salsbury refined Iron v4—tf

NOTICE TO CONTRACTORS.

Proposals will be received at the office of the Hudson and Berkshire Railroad Company, in the city of Hudson, until the 15th of January, 1837, for One Million feet, board measure, of Southern pine, of the following dimensions:—6 inches square, and in lengths of 21, 24, 27, and 30 feet long—also, for 14,000 Chestnut or Cedar ties, 8 feet long, and 6 inches square—and also, 4,000 sills, of Hemlock, Chestnut, or White Pine, 4 by 10 inches, and in lengths of 15, 18, and 21 feet long. The whole to be delivered by the 1st day of July, 1837. GEORGE RICH.

Engineer.

Hudson, Dec. 22, 1836. 52tf